

Health information dissemination among undergraduate students in Zimbabwe with particular reference to the National University of Science and Technology: a study in developing an integrated framework for health information dissemination

By

Thomas Matingwina

Student Number: MTNTHO002

Thesis presented for the Degree of Doctor of Philosophy in the Library and Information Studies Centre

Supervisor: A/Professor Jaya Raju



University of Cape Town

February 2015

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

Declaration

I, Thomas Matingwina hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

I empower the university to reproduce for the purpose of research either the whole or any portion of the contents in any manner whatsoever.

Signature:

Date:

Dedication

I dedicate this thesis to my son Anesu, my mom Esther, my best friend Sharon and all the Matingwinas. Thanks very much for always being there for me.

Acknowledgements

Thanks to the Almighty and Living God for granting me the opportunity to pursue further studies and for the provisions. I would like to express my sincere gratitude to my supervisor, A/Professor Jaya Raju for her unwavering support towards the completion this thesis. Your advice, encouragement, guidance and prompt feedback kept me going.

Let me take this opportunity to thank NUST, and the Library and Information Studies Centre department at UCT for the financial assistance they provided towards the completion of my studies. I also thank the LIS Department, Student Affairs, and the Registrar's Office at NUST for the support they gave me during my studies.

Lastly but not least I thank you Sharon Chitambo and all my friends for the emotional and spiritual support.

Abstract

University students in Zimbabwe lack immediate access to accurate health information. There is lack of explicit and integrated structures for disseminating health information to students in Zimbabwe. This inductive study proposes a needs-based, integrated information dissemination framework for promoting health amongst students at the National University and Science and Technology (NUST). The study assessed the health information needs of students and evaluated existing health information dissemination methods at NUST in developing a framework for disseminating health information. The study is informed by the Salutogenetic Theory of health which culminated into an integrated theoretical framework that combines information dissemination and behaviour change theories. A case study strategy was used to gather data within the pragmatic paradigm of grounded constructivism. The population comprised of undergraduate students, the Dean of Students, the Student Counsellor, and the Nursing Sister. Within-method triangulation with complementary data gathering instruments was used to improve reliability of data. Questionnaires, interviews and focus group discussions were used to gather data. A sample of 426 students and 3 members of staff participated in the study. Qualitative and quantitative content analysis was used to determine the confounding factors that informed the design of the framework. The data was supplemented with health information dissemination principles and procedures drawn from literature. The findings reveal that students need health information on a wide range of health topics. Students prefer mobile electronic media, workshops, qualified health professionals, and peers for their health needs. There are significant gaps between the strategies that are being used by NUST to disseminate health information and the health information needs of the students. The university is using traditional information dissemination media and channels that are not in line with the needs of the students. NUST needs to use more interactive and ICT based information dissemination methods. There is also a need for staff recruitment, training and infrastructural development. The proposed framework emphasizes the need for integration of activities, a viable policy, health information literacy training and the use of a mix of persuasion techniques.

TABLE OF CONTENTS

CONTENTS	PAGE
PRELIMINARIES	
Title Page.....	i
Declaration.....	ii
Dedication.....	iii
Acknowledgements.....	iv
Abstract.....	v
Table of Contents.....	vi
List of Tables.....	xiv
List of Figures.....	xv
List of Boxes.....	xvi
List of Appendices.....	xvii
List of Acronyms.....	xviii
CHAPTER 1: INTRODUCTION TO THE STUDY.....	1
1.1 Introduction.....	1
1.2 Background to the Study.....	2
1.3 Research Problem	5
1.4 Research Aim and Objectives.....	6
1.5 Research Questions.....	6
1.6 Overview of the Theoretical Framework.....	6
1.7 Overview of the Methodology	7
1.8 Contributions of the Study	8
1.9 Assumptions of the Study	9
1.9.1 Methodological Assumption	9
1.9.2 Theoretical Assumptions.....	9
1.10 Definition of Terms.....	10
1.10.1 Health	10
1.10.2 Health Information Dissemination	10
1.10.3 Health Promotion	11
1.10.4 Health Promoting University	12

1.10.5 Salutogenesis	13
1.11 Delimitation of the Study	13
1.12 Organisation of the Thesis	14
1.13 Chapter Summary	15
CHAPTER 2: LITERATURE REVIEW	16
2.1 Introduction.....	16
2.2 Importance of Literature Review	16
2.3 Conceptualising Health Information Need	18
2.3.1 Information Need	19
2.3.2 Health Information Need.....	22
2.3.2.1 Goals or Purpose of Health Information Need	24
2.3.2.2 Context of Health Information Need	25
2.3.2.3 Situation-related Health Information Need	25
2.3.2.4 Health Information Needs and Time	26
2.3.3 The Proposed Definition of Health Information Need.....	26
2.3.4 Linking the Proposed Definition with the Salutogenetic Interpretation of Health	28
2.4 Recognised Health Information Needs of University Students	30
2.4.1 Information Needs that Relate to Treatment of Specific Health Problems.....	31
2.4.2 Information Needs that Relate to Disease Prevention and Health Promotion	33
2.4.3 Information Needs Related to Health Care Providers and Facilities	35
2.4.4 Information Needs Related to Insurance Coverage.....	36
2.4.5 Information Needs Related to Health Information Sources	36
2.5 Unrecognised Information Needs	37
2.5.1 Information Needs That Individuals Already Satisfy	38
2.5.2 Information Needs That Relate to Information Competencies	39
2.5.3 Information Needs That Individuals Choose not to Demand.....	41
2.6 Health Information Dissemination Strategies within Universities	41
2.6.1 Traditional Student Counselling Services	42
2.6.1.1 Departmental and Faculty Services	43
2.6.2 Posters, Notice Boards and Print-outs.....	43
2.6.3 Workshops.....	44
2.6.4 Course-Based Health Education Programmes	45
2.6.4.1 Conceptually Based Wellness Courses.....	46
2.6.4.2 Curriculum Infusion	46

2.6.5 Peer Education Programmes	46
2.6.6 Gatekeeper Training.....	47
2.6.7 Social Marketing	48
2.6.7.1 The Photo-voice Method	48
2.6.8 Selective Dissemination of Information.....	49
2.6.8.1 Cell phone Text Messaging	49
2.6.9 Discussion Groups.....	50
2.6.10 Web-based Interventions.....	50
2.6.10.1 Websites.....	51
2.6.10.2 Electronic Mail	52
2.6.10.3 Web 2.0 and Social Media.....	52
2.7 Criticism of the Current Information Dissemination Methods	53
2.8 Applicable Information Dissemination Principles and Strategies	56
2.8.1 Prevention and Response Focused	56
2.8.2 Integrated Information Dissemination Systems	57
2.8.3 User centred Design and Active User Involvement	58
2.8.4 Management Support and Commitment	59
2.8.5 Need for an Information Dissemination Policy.....	59
2.8.6 Two-way Dissemination	60
2.8.7 Multi-component Strategy Using Multiple Dissemination Methods	60
2.9 Procedures in Developing a Needs-based Information Dissemination Framework	61
2.9.1 Problem Identification.....	61
2.9.2 Identify Priority Problems and Set Long Range Goals	63
2.9.3 Consult the Science to Identify Strategies and Interventions.....	63
2.9.4 Design of the Actual Framework	64
2.9.5 Create a Logic Model and Programme Plan	64
2.9.6 Develop an Evaluation Plan	65
2.9.7 Create an Action Plan.....	66
2.9.8 Develop Implementation Plan.....	66
2.10 Chapter Summary	66
CHAPTER 3: THEORETICAL FRAMEWORK.....	69
3.1 Introduction.....	69
3.2 The Salutogenetic Interpretation of Health.....	70
3.2.1 Linking Salutogenesis with Information Dissemination Principles	72

3.3 Individual-level Behaviour Change Theories	75
3.3.1 Health Belief Model	75
3.3.2 Social Cognitive Theory	76
3.3.3 The Theory of Planned Behaviour and Theory of Reasoned Action	76
3.3.4 Stages of Change Model	77
3.3.5 AIDS Risk Reduction Model	77
3.3.6 Criticism of Individual-level Behaviour Change Theories	78
3.4 Community-level Theories	79
3.4.1 Diffusion of Innovation Theory	79
3.4.2 The Empowerment Model.....	81
3.4.3 The Social Ecological Model	81
3.5 Process Approaches	82
3.5.1 Social Marketing Theory.....	82
3.6 Models of Information Dissemination	83
3.6.1 Diffusion Model	85
3.6.2 Information-seeking Model.....	85
3.6.3 The Elaboration Likelihood Model (ELM).....	86
3.6.4 Criticisms of the Models	87
3.6.5 Integrated Information Dissemination Model	87
3.7 Chapter Summary	89
3.7.1 The Salutogenetic Interpretation of Health	90
3.7.2 Behaviour Change Theories	90
3.7.3 Information Dissemination Models.....	91
3.7.4 Integrated Information Dissemination Model	91
CHAPTER 4: RESEARCH DESIGN AND METHODS.....	93
4.1 Introduction.....	93
4.2 Epistemological and Philosophical Underpinnings of the Research	93
4.3 Research Design: Mixed Methods in Context	96
4.3.1 Validity and Reliability of the Design.....	97
4.3.2 The Case Study Strategy	99
4.3.2.1 Generalisation in Case Study Research	99
4.4 Population and Sample Size.....	100
4.5 Sampling Procedures	101
4.6 Research Instruments	103

4.6.1 Questionnaire	103
4.6.2 Key Informant Interviews	104
4.6.3 Focus Group Discussions	105
4.6.4 Primary and Secondary Literature.....	107
4.6.5 Validity and Reliability of Research Instruments	107
4.7 Data Collection Procedures.....	108
4.8 Data Presentation and Analysis Procedures.....	109
4.8.1 Quantitative and Qualitative Content Analysis.....	109
4.8.2 Procedures in Developing the Framework	111
4.9 Ethical Considerations	112
4.9.1 Approval to Carry Out the Study	113
4.9.2 Protecting Privacy and Confidentiality	113
4.9.3 Informed Consent.....	113
4.10 Chapter Summary	114
CHAPTER 5: RESEARCH FINDINGS.....	115
5.1 Introduction.....	115
5.2 Demographics of Undergraduate Students	115
5.2.1 Age	116
5.2.2 Gender	116
5.2.3 Faculties	117
5.2.4 Programmes.....	118
5.3 Health Information Needs of Students.....	119
5.3.1 General Health Description.....	119
5.3.2 Health Topics Preferred	121
5.3.3 Critical Life Skills	125
5.3.3.1 Problem Solving Skills	125
5.3.3.2 Identity Development	126
5.3.3.3 Interpersonal Communication	127
5.3.3.4 Health Maintenance	128
5.3.4 Health Information Literacy Skills.....	129
5.3.5 Preferred Information Sources, Formats and Channels	130
5.4 Procedures in Developing and Implementing a Needs-Based Framework	133
5.4.1 Describe the Problem and Its Context.....	135
5.4.1.1 Needs Analysis	135

5.4.1.2 Readiness and Resource Assessment	136
5.4.1.2.1 Evaluation of Health Information Received	136
5.4.1.2.2 Evaluation of Health Information Sources	138
5.4.1.2.3 Evaluation of Health Information Content	141
5.4.1.2.4 Evaluation of Health Information Channels and Media	141
5.4.1.2.5 Human Resources and Infrastructural Assessment	143
5.4.2 Identify Priorities.....	144
5.4.2.1 Health Topics.....	144
5.4.2.2 Infrastructural Development.....	145
5.4.2.3 Human Resource Development.....	145
5.4.2.4 Training of Students	145
5.4.2.5 Policy Formulation	146
5.4.2.6 Integration of Health Promotion Efforts.....	146
5.4.3 Consult Science, Theory and Practice.....	146
5.4.4 Selecting Interventions and Planning For Evaluation	148
5.4.5 Implementation and Evaluation	149
5.4.5.1 Formative Evaluation	150
5.4.5.2 Process Evaluation.....	150
5.4.5.3 Summative Evaluation.....	151
5.5 Applicable Health Information Dissemination Principles	153
5.5.1 The Need to Use Synchronous ICTs	153
5.5.2 Health Promotion Strategies Should Be Prevention-focused.....	153
5.5.3 Formulate a Policy	154
5.5.4 Disseminate a Variety of Health Topics	154
5.5.5 Health Information Dissemination System Should Be Integrated	154
5.5.6 The Need to Consult Students in the Development Process (Two-way Dissemination)	155
5.5.7 Development of Students' Life Skills	155
5.5.8 Use a Variety of Information Dissemination Methods	156
5.5.9 Use Persuasion Techniques.....	156
5.6 Summary.....	158
5.6.1 Health Information Needs	158
5.6.1.1 Critical Life Skills	158
5.6.1.2 Health Topics.....	159

5.6.1.3 Information Sources	160
5.6.1.4 Dissemination Channels and Media	161
5.6.2 Procedures in Developing and Implementing an Information Dissemination Framework.....	161
5.6.3 Applicable Information Dissemination Principles	162
CHAPTER 6: INTERPRETATION AND DISCUSSION	163
6.1 Introduction.....	163
6.2 Interpretation and Discussion of Findings	163
6.2.1 Health Information Needs of Undergraduate Students	164
6.2.1.1 Content.....	166
6.2.1.2 Sources.....	169
6.2.1.3 Channels and Media	173
6.2.1.4 Skills	178
6.3 A Review of Procedures in Developing and Implementing a Health Information Dissemination Framework	182
6.4 A Review of Health Information Dissemination Principles	185
6.5 An Integrated Framework for Disseminating Health Information to Students (FDHIS)	188
6.5.1 Rationale for the Proposed Health Information Dissemination Framework.....	189
6.5.2 Limitations of the Present Health Information Dissemination System.....	189
6.5.3 The Concept of FDHIS and its Components.....	191
6.5.3.1 Content.....	191
6.5.3.2 Sources.....	193
6.5.3.3 Media and Channels	194
6.5.3.4 Skills	196
6.5.3.5 Health Information Dissemination Principles	196
6.5.3.6 Persuasion Strategies	197
6.5.4 Objectives of the FDHIS	198
6.5.5 Unique Features of the Framework	198
6.5.6 How the Proposed FDHIS Works	201
6.5.7 Implementation and Evaluation Strategies for the Framework.....	203
CHAPTER 7: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	205
7.1 Introduction.....	205
7.2 Summary	205
7.3 Conclusions and Implications	207
7.3.1 Health Information Needs of Undergraduate Students	207

7.3.2 The Extent to which NUST is Meeting Health Information Needs of Students	209
7.3.3 Procedures in Developing and Implementing a Framework for Disseminating Health Information to Undergraduate Students.	211
7.3.4 Applicable Health Information Dissemination Principles	213
7.4 Implications for Theory	214
7.5 Recommendations.....	215
7.6 Further Research	217
7.7 Chapter Summary and General Conclusion.....	218
References.....	220

LIST OF TABLES

TABLE	DESCRIPTION	PAGE
Table 3.1	Elements and Issues Related to the Information Dissemination Process	87
Table 4.1	Sampling Frame	100
Table 5.1	Students' Health and Gender	118
Table 5.2	Preferred Health Topics	120
Table 5.3	Chi-Square Test for Gender and Health Topics	122
Table 5.4	Preferred Information Sources	129
Table 5.5	Preferred Information Formats	129
Table 5.6	Preferred Information Media and Channels	130
Table 5.7	Health Information Received from NUST	135
Table 5.8	Health Topics Received Compared to Topics Needed	136
Table 5.9	Information Channels and Media Used	140
Table 5.10	Health Information Dissemination Principles and Procedures	155
Table 6.1	Health Topics According To Level of Demand	191

LIST OF FIGURES

FIGURE	DESCRIPTION	PAGE
Figure 2.1	Relating Information Needs and Information Competencies	20
Figure 2.2	Iceberg Analogy of Information Needs	22
Figure 2.3	Integrated ACE Model of Consumer Health Information Needs	23
Figure 2.4	Holistic View of Health Information Needs	28
Figure 2.5	Dimensions of Health Information Need	29
Figure 2.6	River of Life	30
Figure 2.7	Stakeholders	58
Figure 2.8	Logic Model	65
Figure 3.1	Health in the River of Life	73
Figure 3.2	Integrated Theoretical Framework	88
Figure 5.1	Age of Respondents	114
Figure 5.2	Gender of Respondents	115
Figure 5.3	Faculties	116
Figure 5.4	Programmes	116
Figure 5.5	Radar Chart for Student Health Description	118
Figure 5.6	Problem Solving Skills	124
Figure 5.7	Identity Development	125
Figure 5.8	Interpersonal Communication	126
Figure 5.9	Health Maintenance	127
Figure 5.10	Health Information Literacy Skills	128
Figure 5.11	Procedures in Developing and Implementing Health Interventions	132
Figure 5.12	Sources Frequently Used	138
Figure 5.13	Evaluation of Sources	138
Figure 5.14	Evaluation of Content	139
Figure 5.15	Evaluation of Channels and Media	141
Figure 6.1	Health Information Sources for University Students	193
Figure 6.2	Proposed Framework for Disseminating Health Information to Students	194
Figure 6.3	Information Flows of the Current System and the Proposed Framework	198
Figure 6.4	Information flows within the FDHIS	202

LIST OF BOXES

BOX	DESCRIPTION	PAGE
Box 2.1	Framework for Patient Information Needs	25
Box 2.2	Critical Life Skills	57
Box 5.1	Major Steps in Evaluating Health Intervention Programmes	150

LIST OF APPENDICES

APPENDIX	DESCRIPTION	PAGE
Appendix A	Questionnaire for Students	282
Appendix B	Focus Group Schedule for Students	289
Appendix C	Interview Schedule for Dean of Students	292
Appendix D	Interview Schedule for Student Counselor	296
Appendix E	Interview Schedule for Nursing Sister	300
Appendix F	Letter of Authorization-NUST	303
Appendix G	Letter of Authorization-MRCZ	304
Appendix H	Informed Consent Letter for NUST Students	305
Appendix I	Informed Consent Letter for Dean of Students	306
Appendix J	Informed Consent Letter for Student Counsellor	307
Appendix K	Informed Consent Letter for Nursing Sister	308

LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ARRM	AIDS Risk Reduction Model
BPR	Best Practices Registry
CGT	Constructivist Grounded Theory
DoI	Diffusion of Innovation
ELM	Elaboration Likelihood Model
FDHIS	Framework for Disseminating Health Information to Students
GRRs	Generalised Resistance Resources
HBM	Health Belief Model
HIV	Human Immuno-deficiency Syndrome
HPU	Health Promoting University
MRCZ	Medical Research Council of Zimbabwe
NAC	National AIDS Council of Zimbabwe
NUST	National University of Science and Technology
PSI	Population Services International
RSS	Relatively Simple Syndication
SAYWHAT	Students And Youths Working on Reproductive Health Action Team
SDI	Selective Dissemination of Information
SMS	Short Message Service
SOC	Sense of Coherence
SPSS	Statistical Package for Social Science Research
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
VoIP	Voice over the Internet Protocol
WHO	World Health Organisation
WIFI	Wireless Fidelity

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 Introduction

Health is created and lived by people within the settings of their everyday life; where they learn, work, play and love (World Health Organisation (WHO), 1986). Although the concept of health promoting universities has been widely adopted in the developed world, and has begun to take shape recently in Africa (Dooris, 2001; Buor, 2008), there has been little attention to university-based health intervention programmes in Zimbabwe. Moreover, documentation on the effectiveness of health promotion strategies in Zimbabwean universities is still poor (Lionis et al., 2006). Therefore, more research on different aspects of university-based programmes is necessary in order to explore possible unused potentials (Helleve et al., 2011: 847).

Information dissemination is a key element in health promotion efforts. Disseminating health information can improve knowledge transfer from health professionals to the student population, and helps them to maintain and improve their health (Benigeri and Pluye, 2003). A significant number of studies have reported on the effectiveness of information dissemination in promoting health and preventing diseases (Appleby, Walshe and Ham, 1995; King, Hawe and Wise, 1998; Brener and Gowda, 2001; Duggan and Banwell, 2004; Robertson, 2008). However, little attention has been given to holistic, integrated information based health promotion strategies in Zimbabwe. Studies that have been carried out tended to focus on disease specific health promotion strategies (Terry, Masvaure and Gavin, 2005; Zimbabwe National Statistics Agency, 2011). Therefore, there is certainly a need for a study that focuses on information based health promotion interventions in Zimbabwean tertiary institutions.

1.2 Background to the Study

Young people in Zimbabwe used to receive information pertaining to their emotional and physical health from their extended families (Gelfand, 1979: 138). Aunts, grandmothers and grandfathers used to play a pivotal role on matters such as relationships, sex, marriage and general wellbeing of young people (Mufanechiya and Mufanechiya, 2011: 102). However, globalisation coupled with the European educational system changed this social fabric. Most youths now spend most of their time in boarding schools, universities and colleges; therefore, universities are becoming the 'loco parentis' of university students. This has widened the gap between young people and their parents and therefore, youths in Zimbabwe no longer have immediate access to critical information on matters that define their wellbeing (Huber et al., 1994; Kim et al., 2001).

A study by the National AIDS Council of Zimbabwe (NAC) in 2012 reveals that parents are fast becoming a 'no go area' for most young people (Moyo, 2012). This suggests that youths in Zimbabwe are now receiving information pertaining to their health and wellbeing elsewhere, which should be a cause for concern, in the light of the critical importance of health information. This places universities in a unique position of educating students about life in general and more specifically about diseases such as HIV and AIDS (Wyk and Pieterse, 2006: 1). However, this can only be achieved after understanding the health information needs of students, which is a precursor towards devising health promotion programmes (Power and Hunter, 2001). Moreover, this calls for universities to be conscious of this new responsibility so that they can develop clear structures for viable health promotion programmes (WHO, 1998; Misch, 2009).

There is a positive correlation between health and student performance (Brener and Gowda, 2001; Shalin, 2009). Therefore, there is a strong need for health promotion in the university setting (Emmons et al., 1998; Stock et al., 2001; Kwan et al., 2010; Yesus and Fantahun, 2010). A study that was carried out by Austin et al. (2012) revealed that students generally agreed that it was important for [health] information to be easily accessible and found locally generated information sources of higher quality than national sources. The study also revealed that students living off campus were less health literate than those who lived on

campus, presenting a special challenge for health practitioners to make health information easily accessible to these students.

The World Health Organisation (2005) through the Bangkok Charter for Health Promotion advocates settings-based approaches to health promotion. This has prompted the need for health promotion in universities, and gave birth to the concept of health promoting universities, which has been received well in the developed world (Leger, 2006; Meier, Stock and Krämer, 2007; Shalin, 2009). Of late, there has been a steady increase in health intervention programmes within African universities, with some universities establishing wellness centres and developing health information systems for students. However, this is a fairly new concept in Zimbabwe and there is certainly a need for empirical evidence to inform this practice within Zimbabwean university settings.

Studies that have been carried out in Zimbabwean universities reveal that students are confronted with a wide array of health problems that mainly include Sexually Transmitted Illnesses, HIV and AIDS, as well as accommodation and financial problems, among others (Zindi, 1994; Terry, Masvaure and Gavin, 2005; Chiparaushe, Mapako and Makarau, 2010; Savadye, 2011; Zimbabwe National Statistics Agency, 2011; Chibaya, 2012). Therefore, the university should serve as a key life transition stage for young people exploring and experimenting away from parental influence (Dooris and Doherty, 2010). However, universities in Zimbabwe have not done enough to address the health problems that affect students (Savadye, 2011; Chibaya, 2012).

This study focuses on the National University of Science and Technology (NUST), which is the second largest university in Zimbabwe, with an enrolment of 5259 students in 2014 (Admissions and Student Records Department, NUST personal communication 2014, July 23). NUST is a state university and has six Faculties, namely the Faculty of Applied Sciences, Faculty of the Built Environment, Faculty of Commerce Faculty of Communication and Information Science, Faculty of Industrial Technology, and the Faculty of Medicine which has a separate campus. NUST runs undergraduate and postgraduate programmes. However, the programmes do not run concurrently.

The methods that are being used by the National University of Science and Technology (NUST) in Zimbabwe to transfer health information to students include notice boards, a student counsellor and irregular workshops. The main problem with this approach is that it tends to be reactive and disease specific and whilst in actual fact, health is not merely the absence of diseases. Moreover, studies reveal that isolated information dissemination efforts are not effective in addressing health problems (Svanstrom, 1999; Hoffman and Jackson, 2003; Garrard et al., 2004; Jackson et al., 2006).

The World Health Organisation asserted in its *Declaration of Human Rights* that health is not the absence of diseases but it is a state of complete well being (United Nations Department of Public Information, 1948). Therefore, universities need comprehensive and integrated health information dissemination systems, addressing important aspects of health such as diet (James, 2004; Deshpande, 2009; Kicklighter et al., 2010), physical exercise (Cardinal, Jacques and Levy, 2002), stress (Stock, Wille and Krämer, 2001; University of California, 2006; Duke Student Wellness Centre, 2013), and so on because health problems are highly intertwined (Nyamwaya, 1997: 180). Lindstrom (2010) also emphasizes that quality of life or wellbeing is determined by various factors such as cure, protection, and disease prevention.

The Jed Foundation and Education Development Centre (2011: 3) recommended that health information dissemination programmes should be prevention-focused in addition to being response-focused. Moreover, health promotion efforts should go beyond preventing diseases; they should equip students with necessary life skills to enable students to critically assess their environment and apply correct decisions in life situations. The National Centre for the Dissemination of Disability Research (2001: 17) observes that many campuses now offer health promotion programmes to help students develop a variety of life skills.

However, NUST is still lagging behind in terms of health information dissemination due to lack of explicit and coordinated structures for disseminating health information. This scenario leads to lack of accessibility to health information by students (El Kahi et al., 2012). Moreover, without clear structures, there is bound to be less cost effectiveness in health promotion (Tsouros et al., 1998; Svanstrom, 1999; Hoffman and Jackson, 2003; Garrard et

al., 2004; Jackson et al., 2006). This study therefore, aims to address these problems by proposing the development of a needs-based integrated framework for the holistic dissemination of health information for both immediate and long term health information needs of students.

1.3 Research Problem

Universities can play an important role in promoting healthy behaviours amongst students by providing them with reliable health information (Olson and Autio, 1999; Labrecque, Theoret, and Paquin, 1999; Brener and Gowda, 2001; Xiangyang et al., 2003). Studies have shown that students who are in control over their emotional and physical health perform better in their studies (Brener and Gowda, 2001; Shalin, 2009). Therefore, universities need to offer comprehensive health information services to promote students' physical and emotional health (WHO, 2005; Savadye, 2011).

However, there are no explicit structures for the dissemination of health information at the National University of Science and Technology. Current health promotion efforts at the university are reactive and tend to be one way transactions which are responsive to current and immediate health problems. For health promotion efforts in universities to be successful, they need to focus on both immediate and long term needs of students, allowing for the development of critical skills necessary to make considered health decisions (McKay, 1998). Moreover, there should be clear integrated structures in universities that allow for coordinated effort (Dooris, 2001: 6).

At the present, there is little literature on the effectiveness of current health promotion practices in Zimbabwean universities. A review of literature reveals that there has not been a study that looked at reviewing existing health promotion practices in universities. Therefore, there is need for a study that will not only address this disparity, but which would act as a model for information based health promotion in Zimbabwean universities.

1.4 Research Aim and Objectives

The main aim is to study and document the process of developing an integrated framework for disseminating health information to undergraduate students, using NUST as a case study.

The specific objectives are:

1.4.1 To establish the health information needs of undergraduate students at NUST; and

1.4.2 To develop a needs-based framework for disseminating health information to undergraduate students.

1.5 Research Questions

In order to address the above aim and objectives, the study will be guided by the following research questions:

1.5.1 What are the health information needs of undergraduate students at NUST?

1.5.2 To what extent is NUST meeting the health information needs of undergraduate students?

1.5.3 What is the process to be followed in developing and implementing a needs-based framework for disseminating health information to undergraduate students?

1.5.4 What information dissemination principles and strategies should be drawn on (and why) in developing and implementing a needs-based framework for disseminating health information to undergraduate students?

1.6 Overview of the Theoretical Framework

This study used an integrated theoretical framework, whereby relevant information dissemination theories and behaviour change theories were amalgamated into a coherent and analytical framework. Each theory provided a specific focus for the analytic lens of this study. The Salutogenesis Theory informed the determination of health information needs. As

explained earlier, this theory treats health from a holistic perspective, therefore it was useful for determining health information needs of undergraduate students.

The study is based on the premise of effective dissemination, whereby information should not only reach the targeted recipients, but influence behaviour change and effective decision making. Therefore, relevant behaviour change and information dissemination theories (described in Chapter 3) were pivotal in influencing the development of the information dissemination framework. The resultant integrated theoretical framework focused on the key concepts some of which are derived from the individual theories; namely the **Source, Content, Medium, User, and Destination** (see Table 3.1). In other words, an effective and integrated information dissemination system should address each of the above factors.

1.7 Overview of the Methodology

The Constructivist Grounded Theory was suitable for the development of a needs-based information dissemination framework. The approach takes a middle ground between the realist and postmodernist positions by assuming both obdurate and multiple realities (Thornberg, 2012). This approach allowed the researcher to co-construct the framework with the participants. The researcher used available literature and information dissemination principles, together with the views of the participants to come up with a user driven information dissemination framework.

The main advantage of this paradigm is that it allows participants to describe their needs and preferences in the development of the framework. User participation has been viewed as an integral prerequisite for the development of effective information dissemination systems (McGlynn, 1998; Westbrook and Lumbley, 1990; Debbie, 2003; Muhammad et al., 2011).

A case study strategy allowed an in-depth analysis of health information needs and existing information dissemination practices. The findings were important in identifying gaps in the existing system and in determining what the students would prefer. There however was a

danger that some students were not familiar with information dissemination aspects, and therefore contribute less to the study. Therefore, literature and intensive focus group discussions were pivotal in conscientising the student on existing information dissemination methods.

The study used the ‘within-method triangulation’. The approach involves the use of multiple methods within a given single paradigm for data collection and analysis. As elucidated in Chapter 4, using multiple, complementary data gathering and analysis techniques allowed the researcher to reap the benefits of the qualitative and quantitative approaches, while minimizing the drawbacks of each (Tobin and Begley, 2004).

1.8 Contributions of the Study

The World Health Organisation (1986) through the Ottawa Charter for Health Promotion states that health is created and lived by people within the settings of their everyday life; where they learn, work, play and love. The settings-based approach to health promotion has been seen as an effective way of promoting healthy behaviour amongst adolescents (DeRoos, 1977; Dooris, 2001). A significant number of studies from different countries have reported the usefulness of university-based student health services in promoting health amongst students (Olson and Autio, 1999; Labrecque, Theoret and Paquin, 1999; Brener and Gowda, 2001; Xiangyang et al., 2003). However, there is lack of literature on the effectiveness of health promotion practices in Zimbabwe. It is therefore important to conduct a study to determine the success of current health promotion methods or the lack thereof and to develop health promotion solutions that are geared towards the unique needs of students within the African region.

The United Nations Children’s Fund (UNICEF) (2000) argues that educators should not define quality of education as confined to the content that is being delivered and the calibre of teachers but from a broader perspective that involves learners, content, processes, environments and outcomes. UNICEF emphasized the importance of healthy learners, environments that are healthy and safe, and content that encourages the acquisition of life

skills. At this juncture where universities in Zimbabwe are lagging behind in terms of regional and global rankings, it is important for the universities to come up with more innovative health promotion methods as a quality assurance strategy. Hence this study may contribute to the development of such strategies among African universities.

Physically and psychosocially healthy students learn well (Brenner and Gowda, 2001; Shalin, 2009). Health promotion in universities can play an important role in providing the basis for a healthy life and a successful formal learning experience (Williams and Leher, 1998; McCain and Mustard, 1999). This study may contribute towards enhancing the learning experience and successful learning by encouraging students to be in total control over their health.

1.9 Assumptions of the Study

The study was influenced by the following methodological and theoretical assumptions:

1.9.1 Methodological Assumption

Although the study agrees with the principle of obdurate reality, it assumes the epistemological perspective of multiple realities and co-construction of meaning from the data. The study recognizes the importance of subjective human creation of meaning, whereby both the researcher and participants contribute towards the development of theory. This assumption therefore lays the foundation for the needs-based framework that was developed from the study.

1.9.2 Theoretical Assumptions

This study assumes that successful dissemination does not entail effective dissemination. Therefore, the study is guided by the Salutogenetic principle of health promotion which focuses on disease prevention, integration of health promotion services, skills development and the critical importance of information in catalyzing behaviour change.

1.10 Definition of Terms

The following definitions are provided to ensure uniformity and understanding of these terms throughout the study:

1.10.1 Health

WHO (2003) defines health as “... a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. This definition rejects the traditional medical dichotomy that separates health from illness. Therefore, this study treats health as a broad and generic concept that is influenced by not only biomedical factors, but by other socio-economic and demographic factors. O'Donnell (2009: iv) supports this dimension by claiming that “Optimal health is a dynamic balance of physical, emotional, social, spiritual, and intellectual health”.

1.10.2 Health Information Dissemination

There is no comprehensive, commonly accepted definition of information dissemination. Feather and Sturges (2003) define information dissemination as the “Active distribution and the spreading of information of all kinds”. The Free Online Library defines it as “providing information at the right place and format”. These two definitions provide two important insights for information practitioners. The first definition posits that information dissemination systems should be active and not passive. This means that information practitioners should devise means of reaching out to users. The second definition emphasizes the need for targeted audience and relevance in terms of information formats.

In the health context, the National Institute of Cancer (nd) defined information dissemination as the “...the collection, analysis, and dissemination of information useful in the prevention, diagnosis, and treatment of cancer”. The World Bank (2011) defines it as “... a sectoral policy to influence patients' care-seeking and providers' service delivery behavior”. These view information dissemination as a means to an end and not as an end in itself. The definition proposed by the National Institute of Cancer focuses on disease prevention and treatment, while the World Bank Definition focuses on skills development and behaviour

change. In other words, the objective of information dissemination is not to successfully distribute information products, but to effectively distribute health information.

Newman and Vash (1994: 381) argue that, “Experience shows that possession of information does not mean it will be used”. Thus, researchers have added the dimension of use and utilization to the concept of information dissemination (Sechrest, Backer and Rogers, 1994; Rosenthal and Wilson, 2008). The researcher therefore used these definitions to argue that information dissemination should help catalyse behaviour change. It should not only focus on developing health information literacy skills, but should also strive to provide the right information, to the right individual(s), at the right time in the right format to influence decision making and behaviour change.

1.10.3 Health Promotion

According to the World Health Organisation (2013) “Health promotion is the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behaviour towards a wide range of social and environmental interventions”.

O'Donnell (2009: iv) defines Health Promotion as “...the art and science of helping people discover the synergies between their core passions and optimal health, enhancing their motivation to strive for optimal health, and supporting them in changing their lifestyle to move toward a state of optimal health”. Behaviour change and optimal health can be facilitated through awareness, motivation, and skills, and, the creation of opportunities that open access to environments that make positive health practices the easiest choice.

The definitions reveal an important linkage between information dissemination and health promotion. Health promotion is a generic term that is used to describe the processes and procedures that are undertaken to improve health and achieve optimal wellbeing. It also involves the creation of enabling environments. Information dissemination therefore is a facet

of health promotion. From the definitions proposed for this study, information dissemination focused on the importance of information in developing life skills and in aiding decision making in life situations. Therefore, sometimes, the term health promotion is loosely used in the health information dissemination context. The concept of health information dissemination is further interrogated in Chapter 2.

1.10.4 Health Promoting University

The aim of Health Promoting Universities (HPUs) is to improve the health and wellbeing of everyone who is involved with the university. The rationale for this approach is that the university often serves as a key life transition stage for young people exploring and experimenting away from parental influence (Dooris and Doherty, 2010).

The HPU approach emerged from the Ottawa Charter for Health Promotion which was spearheaded by the World Health Organisation. It also draws inspiration from WHO's "Healthy Settings" projects, including "Healthy Schools". The settings-based health promotion approach is holistic and multi-disciplinary, viewing the university as a social system. Its objective is the comprehensive and multi-sectoral integration of health promotion and prevention activities, including the empowerment of all members in the university's community, the creation of structural opportunities for health, and advocacy (Gräser, 2011: 2). The Ireland National Health Promotion Strategy (2000-2005) interposes that "...the settings means combining healthy policies, in a healthy environment with complementary education programmes and initiatives".

The Edmonton Charter for Health Promoting Universities (2005: 16), as cited by Gräser (2011: 2) states that:

Universities and institutions of higher education exist to: educate students, create knowledge through research and contribute to the community and a civil society. As corporations and communities, they impact the health and wellbeing of individuals...As research institutions they contribute to the creation of knowledge on public health and health promotion in a globalized world.

1.10.5 Salutogenesis

The term Salutogenesis was coined by Antonovsky (1979) to describe health as a holistic concept. He later developed the Salutogenesis Theory (described in Chapter 3) which posits that health is a continuum that focuses on the relationship between health, stress and coping (Antonovsky, 1987; Lindström and Eriksson, 2006; Lindström, 2010). The theory comprehends health holistically, that is health is more than the absence of illness. In the health promotion context, the term Salutogenesis is therefore used to describe approaches which focus on factors that support human health and well-being, rather than those that focus on factors that cause disease.

Antonovsky called the new line of vision he had developed Salutogenesis (salus = invulnerability, salvation, happiness; genesis = formation). Fundamentally, the theory forms the opposite to the hitherto dominating concept of pathogenesis, which examines the causes of illness. Salutogenesis asks why a human being is healthier and less ill than another and what contributes to remaining healthy (Klues-Ketels, 2006).

The concept of Salutogenesis was the central theme of this study. This study rejects the pathogenetic approach that is being used by most universities in Zimbabwe. It proposes the Salutogenetic principle of health promotion and student empowerment in matters that affect their health. The study proposes the integration of health promotion efforts since health is influenced by interrelated factors.

1.11 Delimitation of the Study

The study was carried out at the National University of Science and Technology (NUST), Zimbabwe. Respondents for the study include the student population, the Dean of students, the Student Counsellor and the Nursing sister. NUST has 6 Faculties. However, the Faculty of Medicine, post graduate students and students on industrial attachment were not included in the study because the students are not based at the campus and therefore difficult to access. The study aimed at developing a needs-based information dissemination framework. Therefore, the findings that will be generated may not be easily generalised to other

university settings, due to their unique nature. However, the study may provide useful insight and shed light on issues beyond the immediate context in which the research was undertaken.

1.12 Organisation of the Thesis

The research report is made up of seven chapters. Chapter One addresses the background to the study. This chapter provides the context of the problem that is being studied. The main triggers highlighted in the background dwell on the nature of current health promotion practices within Zimbabwean universities, chief among them being lack of clear coordinated structures for disseminating health information. The main objective was to develop a framework for disseminating health information. The main justification of the study was the need for empirically informed health promotion practices in Zimbabwean universities.

Chapter Two provides the literature review. A critical literature review focuses on matters such as health information needs of students, model health information dissemination strategies, and principles and procedures in developing health information dissemination frameworks. Primary and secondary literature was used to influence the design of an integrated framework for health information dissemination to students.

Chapter Three presents the theoretical framework of the study, the study proposed an integrated theoretical framework informed by relevant information dissemination and behaviour change theories. Chapter Four outlines the study's research philosophy and design, including its case study approach, the study population, sampling procedure, data collection methods and tools, quality of research tools, research procedure, data processing and analysis, and procedures in developing the information dissemination framework. In this chapter the researcher also addressed the validity and reliability issues of the study.

Chapter Five is concerned with the analysis and presentation of results. Data was presented both qualitatively and quantitatively, according to the research objectives. Chapter Six dwells on interpretation and discussion of data, and the development of the framework, using the data presented in Chapter Five, together with insights gleaned from the review of literature. Chapter Seven provides conclusions and recommendations, based on the findings and discussions thereof.

1.13 Chapter Summary

This chapter laid the foundations for the report. It introduced the research problem, objectives and research questions. Then the research was justified, definitions and assumptions were presented, the methodology and theoretical framework were briefly described and justified, the report was outlined, and the limitations were given. On these foundations, the report can proceed with a detailed description of the research. The next chapter reviews literature on health information dissemination.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the literature related to the design of an effective health information dissemination framework for university students. It particularly focuses on the health information needs of university students, health information dissemination practices within university settings and the theoretical and practical aspects that may be used in designing and implementing a needs-based integrated framework for disseminating relevant health information within the university.

2.2 Importance of Literature Review

A literature review is “...a critical analysis of a segment of a published body of knowledge through summary, classification, and comparison of prior research studies, reviews of literature, and theoretical articles” (University of Winscom, 2012). Neuman (2000: 445) points out that a literature review is based on the assumptions that knowledge is progressive and that we learn from and build on what others have done. He further identifies four goals of a literature review, namely:

- i. To demonstrate familiarity with a body of knowledge and establish credibility;
- ii. To show the path of prior research and how a current project is linked to it;
- iii. To integrate and summarize what is known in an area; and
- iv. To learn from others and stimulate new ideas.

A literature review is not a mere summary of literature. A good review should organize information and relate it to the thesis or research question. It should help the researcher in identifying controversies in the literature and to develop questions for further research

(Boyne, 2009). The Birmingham City University (2013) summarises nine major goals of a literature review. The university highlighted that a literature review should:

- i. Compare and contrast different authors' views on an issue;
- ii. Group authors who draw similar conclusions;
- iii. Criticize aspects of methodology;
- iv. Note areas in which authors are in disagreement;
- v. Highlight exemplary studies;
- vi. Highlight gaps in research;
- vii. Show how your study relates to previous studies;
- viii. Show how your study relates to the literature in general; and
- ix. Conclude by summarising what the literature says.

Boyne (2009) stressed the point that a literature review at PhD level should involve analytical synthesis covering all known literature on the topic, high level of conceptual linking within and across theories, and summative and formative evaluation of previous work. He used Bloom's taxonomy, focusing on the cognitive domain, to argue that a literature review should contribute to knowledge or understanding in the candidate's chosen field of study. Therefore, the aim of this review was to analytically synthesise and evaluate literature relating to the study, to provide a foundation for creating new knowledge.

This study uses the topical or thematic organisation in which the literature is divided into sections representing the conceptual subjects of the research topic (Ferfolja and Burnett, 2009). The topics under review are:

- i. Health information needs of undergraduate students;
- ii. Health information dissemination methods within universities;
- iii. Information dissemination principles; and
- iv. Procedures in developing and implementing a needs-based information dissemination framework.

2.3 Conceptualising Health Information Need

Power and Hunter (2001: 597) suggest that a precursor to devising health promotion interventions is the identification of information needs. Aarø et al. (2006: 151) interpose that, “...a necessary and important first step when conducting evidence and theory-based interventions is the collection, analysis, and interpretation of available data that may contribute to the planning and design of the intervention programme”.

Alzougool, Chang and Gray (2008: 1) build upon this case by stating that a comprehensive understanding of the information needs of consumers is a basic step in developing effective Health Information Systems (HIS) targeted to those consumers. They further state that it helps in understanding other dimensions such as consumers’ information behaviours and sources. Therefore, a careful identification, analysis and classification of information needs is an important foundation for the designing of an effective health information dissemination framework.

However, the phenomenon of health information needs has been surrounded by limitations and assumptions in the literature. An in-depth review of literature on health information needs revealed that most research had been done by medical practitioners, who tended to look at the concept from a ‘narrow’ perspective and tend to describe ‘health information needs’ as ‘health needs’. For example, studies that were carried out by Davies et al. (2000) and Kitzrow (2003) viewed health information needs in the context of ‘health concerns’ or simply ‘health topics’ of interest to individuals.

Various authors have attempted to conceptualise the term to mitigate the confusion that surrounds it. Alzougool, Chang and Gray (2008: 3) argued for comprehensiveness in understanding health information needs. The authors proposed that there are implicit and explicit health information needs, whether one is aware or not and whether or not one agrees that one needs information.

Miranda and Tarapanoff (2008) and more recently Chiu and Wu (2012) integrated the issue of individual information searching as part of an information need. Rutten et al. (2005), Nwezeh (2008) and Anasi and Nwalo (2012) incorporated information sources that are demanded by individuals as part of an overall health information need. In light of these variations it is therefore important to conceptualise the terms 'information need' and 'health information need', in order to come up with an informed definition that will be used for this study.

2.3.1 Information Need

Researchers tended to treat an information need as the gap between what we know and what we need to know, or to an anomalous state of knowledge (Belkin et al., 1982; Case, 2002; Braun et al., 2007). A simplistic definition offered by Timmins (2006: 379) specified an information need as "...what the client needs to know". The current definitions of information needs concentrate on the recognition of the lack of information; they treat it as obvious that an information need arises when a user demands for information.

Ormandy (2010: 92) argues that these definitions tend to focus on the content of information that information seekers prefer, and not why they need information. Information needs should be looked at within the context in which the information seeker is. Ormandy assimilated theories originating from Information Science and proposes a definition of an information need as "...recognition that their knowledge is inadequate to satisfy a goal, within the context or situation that they find themselves at a specific point in the time" (Ormandy, 2010: 92).

Ingwersen and Jarvelin (2005: 448) also support the view that the context and situation of the individual are key dimensions that must be considered in relation to understanding information need. Case (2002: 226) adds that "...information needs do not arise in a vacuum but rather owe their existence to some history, purpose and influence".

Miranda and Tarapanoff (2008) further support this view by partitioning an information need into the Cognitive, Affective and the Situational dimensions. According to these authors, the

cognitive approach, suggests that people are mediated, in their interactions, by states of knowledge about themselves, about those whom they interact with and or about the problematic situations they face. The **affective dimension** is related to the individual history, in terms of the progression of thoughts, feelings and perceptions experienced in moments of confusion, uncertainty, anxiety, expectation, accessibility and objectivity. The **situational dimension** refers to the beliefs and suppositions that are part of the individual's culture and of his or her environment. It is a set of characteristics, opportunities and difficulties caused by the environment, structures of the existing problems and beliefs about what constitutes the solution of a problem.

Miranda and Tarapanoff (2008) also argue that information needs are defined by information search and use processes. They argue that information use depends on skills such as the individual evaluation of the cognitive and emotional relevance of the information received. This notion has been supported by several studies in the Information Science field (Wilson, 1999; and Choo, 2006). Miranda and Tarapanoff (2008) illustrated the linkages between information needs and competences (see Figure 2.1).

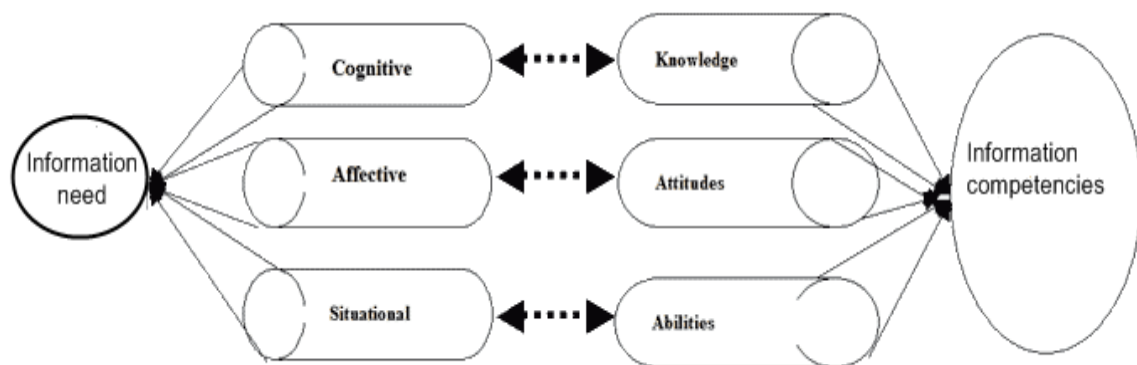


Figure 2.1: Relating Information Needs and Information Competencies (Source: Miranda and Tarapanoff, 2008)

The definitions that have been discussed above have identified many causes that give rise to information needs such as: seeking answers, uncertainty reduction, bridging gaps, solving problems, understanding and stress and coping. However, although useful, these definitions tend to have a number of loopholes. Case (2002) argues that and in everyday life, information

need is more than that, because sometimes information itself increases the stress and uncertainty of individuals. He cited an example that, in some situations, individuals may not demand information even if they need it because they may be afraid of the consequences of this information if they have it.

This study challenges existing definitions of information need that tend to view an information need as the recognition and expression of the lack of information. The study supports the notion of recognised and unrecognised information needs proposed by Alzougool, Chang and Gray (2008). Alzougool, Chang and Gray (2008: 2) used the iceberg analogy to help clarify the comprehensiveness of information needs. In other words, the iceberg analogy reveals that in most cases, the information that is usually demanded by individuals is usually only a tip of the iceberg.

In the view of Alzougool, Chang and Gray (2008: 3) there are explicit and less explicit information needs. They highlighted the need for researchers to address less explicit information needs, for example, the information needs that are being satisfied already, information needs that individuals choose not to demand, and information needs that individuals have not recognised yet (see Figure 2.2).

This study therefore proposes the need to focus on both recognised and unrecognised health information needs. The researcher treated health information literacy skills as unrecognised health information needs because it is possible for students to believe that they possess certain skills while in fact they do not. The researcher used focus group discussions to address this problem. Focus group discussions allowed the researcher to explain complex concepts such as health information literacy to the students.

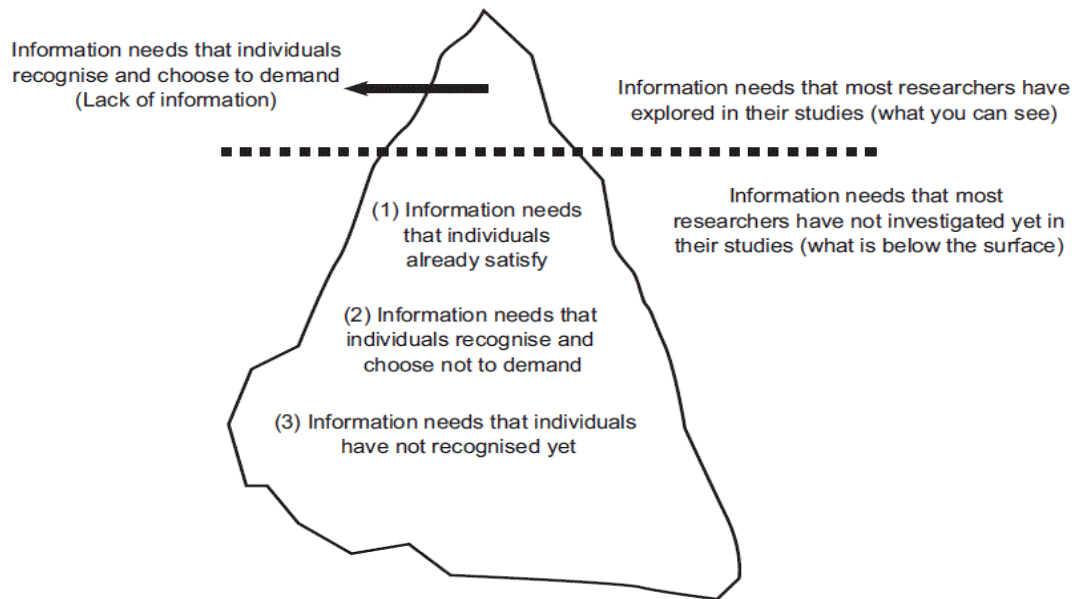


Figure 2.2: Iceberg Analogy of Information Needs (Source: Alzougool, Chang and Gray, 2008)

2.3.2 Health Information Need

The comprehensive view of information needs forms the basis for the definition of health information needs that is proposed for this study. Marcella, Baxter and Moore (2002) have highlighted the shortage of formalised models and frameworks that may provide a guide for understanding health information needs of consumers. In view of the difficulties and limitations that surround the definition of the term ‘information need’ in the literature, definitions of the term ‘health information need’ have also had some limitations. In their attempt to come up with an integrated model of health information needs, Chiu and Wu (2012) developed their ACE (Action, Cognition, and Emotion) model of health information needs, inspired by Kuhlthau’s (2004) Information Seeking Process model.

Chiu and Wu (2012: 2) argue that information seeking is an active process of constructing, involving fitting information into what one already knows, and extending this knowledge to create new points of view. Their model also purports that individuals seek health information in light of an existing health problem (see Figure 2.3).

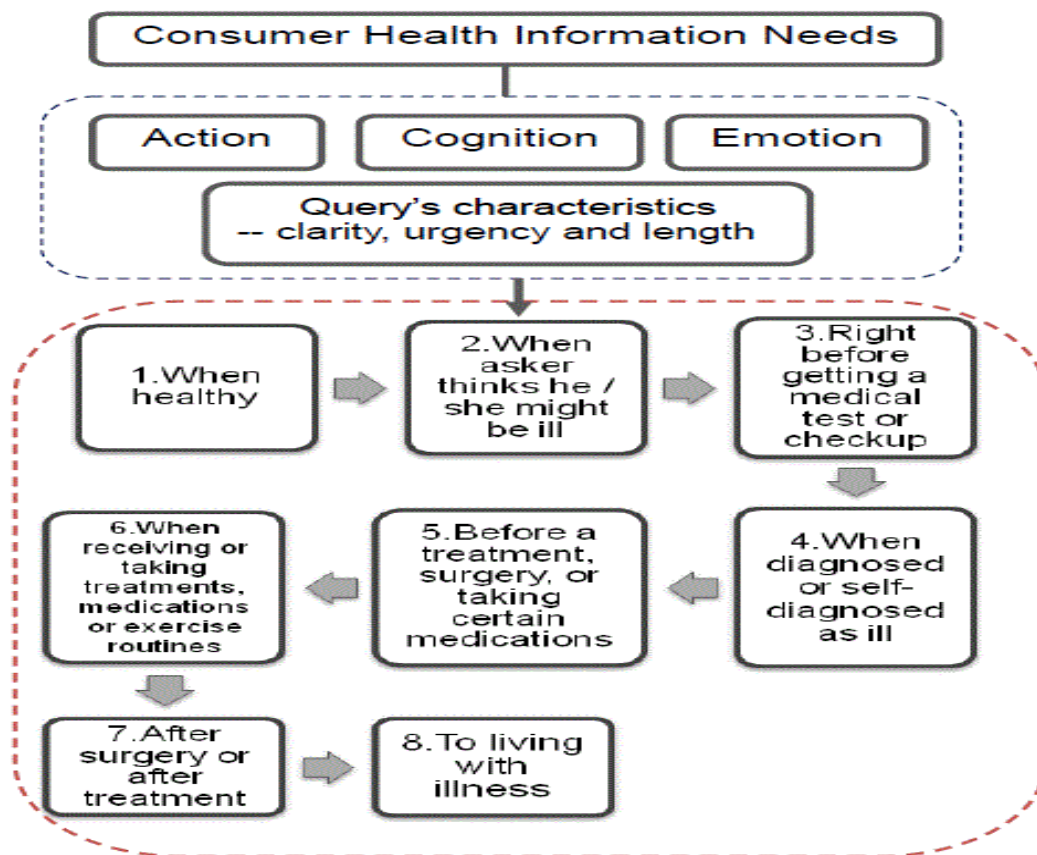


Figure 2.3: Integrated ACE Model of Consumer Health Information Needs (Source: Chiu and Wu, 2012)

The ACE model that was proposed by Chiu and Wu (2012), poses three major problems. Firstly, it suggests that the client information needs are determined by the individual, in the light of their health problems, whilst in essence they may be biased by professionals who consider certain information to be appropriate (Leydon, Boulton and Moynihan, 2000; Dixon-Woods, 2001; Timmins, 2006).

Secondly, the above authors concentrate on explicit, conscious needs of individuals, at the expense of unconscious needs. Alzougool, Chang and Gray (2008: 3) emphasized the need to address health information needs that are not recognised by individuals concerned, including the information needs that individuals choose to ignore. Thirdly, the model is biased towards the medical perspective of health information needs, at the expense of health information

competencies, which have been considered important in determining health information needs (Wilson, 1999; Choo, 2006; Miranda and Tarapanoff, 2008).

Ormandy (2010) came up with a broader and more practical definition of health information need by assimilating complex theories derived from the Library and Information Science field into the health care context. The author identifies four theoretical concepts that influence health information needs, namely; Goals or purpose, Context, Situation, and Time. These concepts are discussed below.

2.3.2.1 Goals or Purpose of Health Information Need

Ormandy (2010: 95) cited several studies which support the view that health information needs emerge because of an underlying purpose to meet a goal or activity, for example, coping with a health threatening situation, having to participate or be involved in making a medical decision, or the need for behaviour change to prevent further problems (Van der Molen, 1999; Rees and Bath, 2001; Wildemuth and Hughes, 2005; Timmins, 2006). One of the studies which support the goal oriented approach to health information needs is that of Coulter, Entwistle and Gilbert (1999: 319) who derived a broad generic framework for patient information needs in terms of the purposes for which information is used (see Box 2.1).

Box 2.1: Framework for Patient Information Needs

- Understand what is wrong
- Gain a realistic idea of prognosis
- Make the most of consultations
- Understand the processes and likely outcomes of possible tests and treatments
- Assist in self-care
- Learn about available services and sources of help
- Provide reassurance and help to cope
- Help others understand
- Legitimize seeking help and their concerns
- Learn how to prevent further illness
- Identify further information and self-help groups
- Identify the best health-care providers

Source: Coulter, Entwistle and Gilber (1999)

2.3.2.2 Context of Health Information Need

Several studies support the importance of studying information need within the context in which they occur (Savolainen, 1995; Case, 2002; Johnson, 2003; Ingwersen and Jarvelin, 2005; Ankem, 2006; Zhang and Benjamin, 2007). Ormandy (2010) drew key contextual concepts from Wilson's (1999) model that includes the influence of psychological, stress, self-efficacy, demographic, role-related and environmental factors.

Psychological states of anxiety, depression and feelings of control, for example, have been cited as reasons that may affect individual health information needs (Ankem, 2006). Two systematic reviews of patient information needs in health-care settings found that managing stress and coping were the underlying goals of information needs within the majority of studies (Timmins, 2006).

Demographic variables such as age, gender, social and economic status, level of education, ethnicity, health status, diagnosis and stage of disease have all been posited as factors that influence information needs (Luker et al., 1995; Case, 2002; Longo, 2005; Rutten et al., 2005; Mayer et al., 2007). For example, younger patients have been shown to need more information than older patients (Ankem, 2006; Parker et al., 2007). Income, gender and education have also been shown to be positively associated with the need for high levels of health information (Rutten et al., 2005; Mayer et al., 2007).

2.3.2.3 Situation-related Health Information Need

Health information needs have been linked to circumstances in which people find themselves in. Situations in life often create an awareness of an information need (Julien and Michels, 2004). Ormandy (2010: 97) cited Dervin's (1998) Sense-Making Theory to argue the point that situations in an individual's life necessitate the need for health information. Individuals construct sense from situations such as critical incidents, encounters, experiences or activities that occur at a moment in time. Threatening situations or diseases such as cancer and other chronic diseases could stimulate a need for information (Lambert and Loiselle, 2007).

2.3.2.4 Health Information Needs and Time

Studies have shown a direct co-relationship between health information needs and time (Dervin, 1992; Case, 2002; Savolainen, 2006). Godbold (2006: 12) argues that different health information needs are met at different stages when one seeks to address a health problem, for example, certain information needs can be met during consultation while other needs may be met at a later stage.

Case (2002: 87) states that an information gap might lead to the discovery of other gaps that may be addressed instantly, or at a later date. Julien and Michels (2004: 552) also argue that information needs are influenced by time pressures. Often lack of time prevents individuals meeting their information needs even when they are highly motivated to do so (Nicholas, 2000).

2.3.3 The Proposed Definition of Health Information Need

This study builds upon the definition of information need that was proposed by Ormandy (2010: 99), that is, an “Information need is a recognition that your knowledge is inadequate to satisfy a goal that you have, within the context or situation that you find yourself at a specific point in time”. This definition puts into perspective the importance of goals, context, situation and time in understanding health information needs.

The definition proposed by Ormandy is however built on the assumption that health information seekers always make a conscious decision to seek for health information. This poses two problems which will be addressed by this study. The first problem is that sometimes individuals may not realise that they have a health information need due to ignorance or that that need is already being met without the individual’s knowledge (Alzougool, Chang and Gray, 2008: 4).

The second problem is that although individuals may recognise an information need, they may choose not to search for information due to fear (Lambert and Loiselle, 2007: 682), anxiety and worry, lack of search skills and unavailability of information sources (Godbold,

2006: 1014), or lack of time (Nicholas, 2000). This study therefore amalgamates the view of Ormandy (2010) that put into perspective the importance of goals, context, situation and time, and the proposition of ‘unrecognised’ health information needs, proposed by Alzougool, Chang and Gray (2008).

The researcher therefore proposes that a health information need is ‘an individual’s recognised or unrecognised knowledge and skill gap in health information seeking which can be actively or passively met, within a particular context, situation and time, using appropriate resources and skills’. This definition addresses the fact that health information needs may not be realised by individuals and that information seekers can passively receive health information to meet their needs. It also puts into perspective the importance of health information literacy and preferred information formats as important dimensions of a health information need (Miranda and Tarapanoff, 2008). This holistic view of health information needs is illustrated in Figure 2.4.

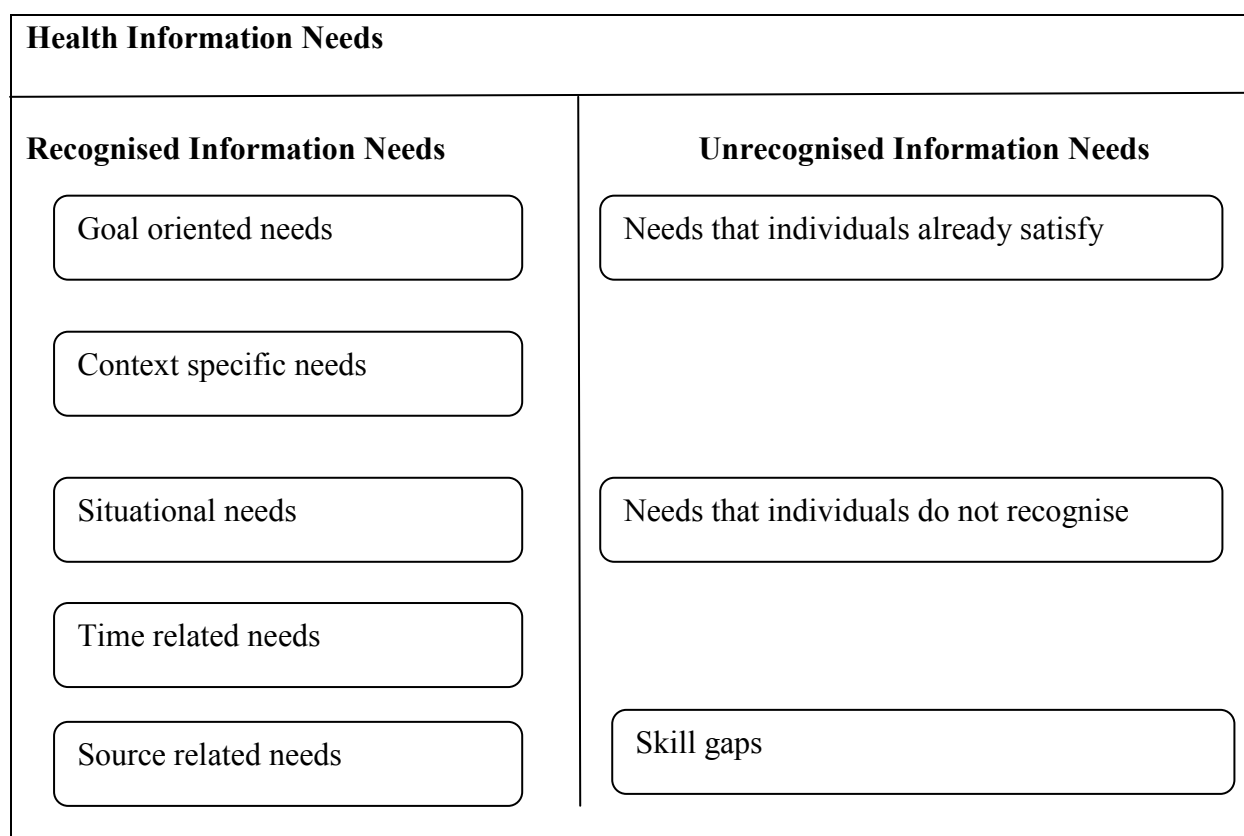


Figure 2.4: Holistic View of Health Information Needs

The proposed definition also provides an important aspect of the source of health information, which is often overlooked by researchers. Decision making in the context of health calls for access to accurate and relevant health information, therefore the source of health information should be given prominence when trying to define health information needs (Cline and Engel, 1991: 55). The concept of health information need in this study will include: (1) specific recognised needs to solve existing health problems, including preferred information sources and (2) unrecognised needs (needs related to information seeking skills and those which are being unconsciously met). The researcher developed a conceptual model (see Figure 2.5) to illustrate the dimensions of a health information need.

The content dimension looks at the health topics (both recognised and unrecognised) of interest to individuals. The process dimension looks at the ability of individuals to search and evaluate health information (knowledge, attitudes and abilities). The format dimension looks at individual preferences in terms of the media and channels used to convey health information.

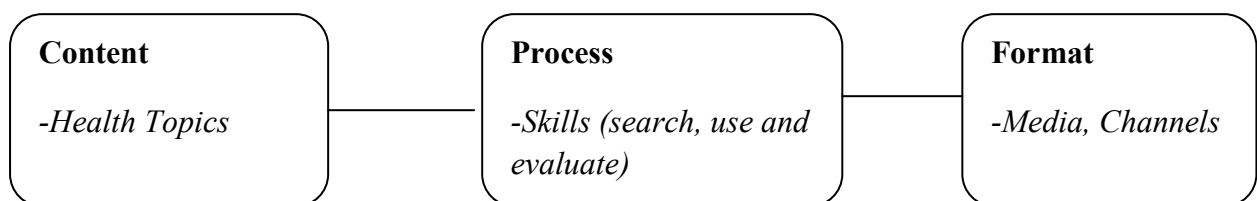


Figure 2.5: Dimensions of Health Information Need

2.3.4 Linking the Proposed Definition with the Salutogenetic Interpretation of Health

Lindström (2010) modified Antonovsky's (1987) Salutogenesis Theory (described in detail in Chapter 3) which uses the river as a metaphor in health promotion. The Theory of Salutogenesis stresses that it is not enough to promote health by building bridges to keep people from falling into the river, through curative care and preventive medicine. Instead people have to learn to swim (Antonovsky 1987). Antonovsky was emphasising the need for individuals to develop life skills such as decision making and health information literacy, which would enable them to critically assess their environment and apply correct decisions in situations that are detrimental to healthy life.

Lindstrom (2010) used the *Health in the River of Life* metaphor to argue that at birth, individuals drop into the river which, just like life, is full of risks and resources. Some are born at ease where the river flows gently, where there is time to learn, where one can float and the prerequisites for life are good with many resources at one's disposal, like being born in a welfare society. Others are born close to the waterfall, at *dis-ease*, where the struggle for survival is hard and the risk of going over the rim is much greater.

Lindstrom (2010) emphasises that quality of life or wellbeing is determined by various factors such as cure, protection, disease prevention, health education and health promotion. He placed health promotion at the peak of wellbeing, supporting the importance of information in shaping the health status of individuals (see Figure 2.6).



Figure 2.6: River of Life (Source: Lindstrom, 2010)

At the core of Lindstrom's theory is the argument that individuals should learn how to swim in the river of life. This can be achieved by developing essential health information literacy skills such as the ability to access, evaluate, and use health information to solve existing health problems and to prevent risky health behaviour. The proposed definition highlights the need to recognise the importance of information literacy skills and individual preferences in terms of the formats and channels used to convey health information. This is in line with the Salutogenetic principle that individuals should have the ability to identify and use the resources necessary to improve their options for a better and healthy lifestyle. In other words, individuals need health information literacy skills when they are in the river of life so that they can live a quality life.

2.4 Recognised Health Information Needs of University Students

To address specific health information needs of university students, this study will abide by the proposed definition which takes into account recognised and unrecognised information needs. Recognised health information needs are those needs that are driven by a knowledge gap and students make conscious moves to address them. These health information needs are closely linked to the health problems that students encounter within the university setting (Nwezeh, 2008). Several studies reveal that students seek health information to make decisions on health related matters (Bandason and Rusakaniko, 2010; Kicklighter et al., 2010; Anasi and Nwalo, 2012; Downs and Eisenberg, 2012; Ayres, Mahat and Atkins, 2013; Conley, Travers and Bryant, 2013).

Sangl and Wolf (1996) reported a variety of health information types for health care decisions-making, including: (1) information on health promotion, and preventive health behaviours; (ii) information of treatments or services for specific diseases or chronic illnesses; (iii) information related to health care providers and facilities; (iv) health insurance related information. Deering and Harris (1996) and the Consumer and Patient Health Information Section (1996) of the Medical Library Association of the United States of America support these dimensions of health information needs by highlighting information needs on symptoms, diagnosis, treatment of disease, health promotion, preventive medicine, the determinants of health, and accessing the health care system. These dimensions however tend to be narrow in focus, they tend to ignore psychological and emotional dimensions of health.

Baker (2004) came up with broader categories of health information needs that include physical, psychological, emotional, spiritual and financial health information needs. This study embraces the dimensions that were proposed by Sangl and Wolf (1996), the Consumer and Patient Health Information Section (1996), and Baker (2004).

This study further proposes the issues of information sources as an important factor in determining health information needs. Studies that have been carried out in the health field tended to look at health information needs from a medical perspective, concentrating on

specific health problems (Davies et al., 2000; Stock Wille and Krämer, 2001; Cukrowicz et al., 2011; James, 2004; Deshpande, Basil and Basil, 2009; Kicklighter et al., 2010; Vaughn, 2012; Lamis and Jahn, 2013).

This study challenges this ‘narrow’ approach by suggesting a combination of the medical and informational perspective of health information needs. This study therefore adds the dimensions of information skills gaps (health information literacy) and preferred information sources as important aspects of health information needs. This proposal is supported by Nwezeh (2008), who added the dimension of information sources, and Miranda and Tarapanoff (2008) who emphasized the importance of information competencies in understanding health information needs.

This study therefore treats recognised, specific health information needs within the five domains: (i) Information needs on treatment and services for specific health problems, (ii) Information needs on disease prevention and health promotion, (iii) Information needs related to health care providers and facilities, (iv) Information needs on insurance coverage, and (v) Information needs related to health information sources. It is important to note that the specific health information needs that will be discussed may be goal-oriented, contextual, situational or time specific, as highlighted in the working definition proposed for this study.

2.4.1 Information Needs that Relate to Treatment of Specific Health Problems

Adolescence is a stage when individuals experience a wealth of developmental opportunities to engage in behaviours that can either lead to health risks or a healthy lifestyle (Millstein, Peterson and Nightingale, 1993). University students are vulnerable to a myriad of health problems on matters related to diseases, emotional health, coping abilities, and interpersonal relations (Ayres, Mahat and Atkins, 2013). Studies reveal that most Zimbabwean and African students need health information on specific health problems that include HIV infection, other sexually transmitted infections (STIs), drug use, and injuries related to physical violence (Gwede et al., 2001; Terry, Masvaure and Gavin, 2005; Nwezeh, 2008; Helleve et al., 2011).

The reason why most students in Zimbabwe are concerned about finding information on HIV and AIDS is that the pandemic poses a huge threat to Zimbabwean university students. When students enter college life, they begin to experiment with sex, alcohol, and other drugs and therefore increase their risk of developing serious health problems (Gwede et al., 2001). Other studies that have been carried out in Zimbabwe have also indicated that a significant proportion of adolescent males and females are sexually active, placing them at risk of HIV infection (Campbell and Mbizvo, 1994; O'Donoghue, 1996; Meekers and Wekwete, 1997).

Most of the sexual and reproductive health challenges faced by Zimbabwean students are deeply rooted in the economic hardships youths face (Savadye, 2011). A culture of pioneering is observed within the student community with a lot of the young people shouldering responsibilities such as paying for their own food as parents fail to do so due to the paltry salaries they earn against the high tuition fees. A report by Savadye (2011) reveals that female students are the hardest hit. Some female students who were interviewed in a survey of college students in Zimbabwe admitted that at times they are left with no option but to go out with 'sugar daddies' (a term used to describe rich, older and promiscuous men) who finance their studies. Zindi (1994) reported that almost half of the women students at the University of Zimbabwe were going out with 'sugar daddies'. Studies reveal that these challenges significantly contribute towards risk behaviour and ultimately health problems among students (Gwede et al., 2001; Murphy, 2005).

An extensive review of literature revealed that although students generally have similar health problems, there are some variations in terms of gender. Female students tend to seek more health information than male students (Davies et al., 2000; Stock, Wille and Krämer, 2001; Anasi and Nwalo, 2012). The most common health problem faced by students from both developing and developed nations is that of anxiety and depression (Nwezeh, 2008; Alvi et al., 2010; Jadoon et al., 2010; Sieben, 2011; Conley, Travers and Bryant, 2013; Vázquez, MRes and Díaz, 2012; Repak, 2013).

A study that was conducted by Stock, Wille and Krämer (2001) among Germany university students indicated that the majority of university students sought information on stress

management. On the contrary, a study that was carried out by Nwezeh at a Nigerian university indicated a minority of only 10% students indicated that they needed information on mental health promotion. This shows some differences in terms of health information priorities between students from developing nations as compared to those from developed nations.

The most common causes of anxiety and depression amongst students the world over were information and input overload, financial indebtedness, lack of leisure time, and pressure of work and career choices (Firth, 1986). The United States National Institute of Mental Health (2003) added other causes of anxiety and depression that include: greater academic demands, loneliness, changes in family relations, financial responsibilities, changes in social life, exposure to new people, ideas, and temptations, and preparing for life after graduation. Studies have shown that other health problems that affect university students include attention disorder (Jardin, Looby and Earleywine, 2011), homesickness (Thurber and Walton, 2012), and sleeping disorders (Pilcher and Walters, 1997; Gaultney, 2010; Gilbert and Weaver, 2010).

2.4.2 Information Needs that Relate to Disease Prevention and Health Promotion

An increasing number of university students are seeking health information on disease prevention and health promotion, and extensive research has tried to identify areas of concern among university students seeking counselling services. According to a study by the United States Department of Health and Human Services (2008), of over 3,800 students who sought counselling services at nine university counselling centres in the 2007 academic year, 21% wanted information on how to prevent suicide. This trend may be supported by the fact that suicide amongst students is one of the greatest health concerns for university counsellors (Taliaferro et al., 2009; Cukrowicz et al., 2011; Vaughn, 2012; Lamis and Jahn, 2013).

A study that was carried out by Nwezeh (2008) at the Obafemi Awolowo University in Nigeria indicated that most of the respondents (90%) required preventive information on reproductive health issues such as unwanted pregnancies, sexually transmitted infections, and use of contraceptives and relationships. Seventy-six percent wanted information on emotional

health, while 60% of the respondents indicated that they needed information on personal hygiene. This is in line with a study which was carried out by Stock, Wille and Krämer (2001) which indicated a significant proportion of students (18.2%) seeking information on sexually transmitted diseases, contraceptives and prevention of other reproductive health aspects.

Although results from different studies show that university students seek information on contraceptives and prevention of STD and HIV and AIDS, evidence in the literature suggests that most students, especially in Africa, still engage in risky sexual behaviours. An African study on risk perception showed condom use to be low and perceived vulnerability to be low in young adults. Infection rates increased with age with 18.9% infection rates among 17-20 year olds and 43.1% among 21-25 year olds (MacPhail and Campbell, 2001: 1613-27). A study that was carried out by Peltzer (2000) in South Africa also indicated that a significant proportion (65.4%) of university students did not always use a condom when engaging in sex. This scenario is further supported by a study that was carried out by Gwede et al. (2001) which showed that 48.6% of Zimbabwean students had experienced sexual intercourse and had not used a condom during their most recent sexual intercourse.

Studies that have been carried out in different countries reveal that students seek health information pertaining to diet and nutrition (James, 2004; Deshpande, Basil and Basil, 2009; Kicklighter, 2010). A study that was carried out by Stock, Wille and Krämer (2001) revealed that one-fifth of students (19.3%) showed a need for counselling about healthy nutrition and 13.0% had an interest in counselling regarding eating disorders. In healthy nutrition as well as in eating disorders, the request was higher in female than in male students. Similar gender differences indicating better health practices and preventive behaviour in female students have been reported previously in other countries like Great Britain (Wardle and Steptoe, 1991) and Sweden (Näslund and Frederikson, 1993). However, a study by Davies et al. (2000) showed that male students require more information on alcohol and drug abuse.

The issue of sexual harassment has raised the eyebrows of many student counsellors in universities. Studies that were carried out by Zindi (1994) and Jamela (2011) on sexual

harassment in Zimbabwean institutions of higher learning revealed that in almost every institution of higher learning in Zimbabwe there exist a significant number of male lecturers who sexually harass female students. A similar study was carried out at the University of Natal, South Africa and yielded similar results (Simalane, 2001). This trend is also evident in studies which have been carried out in the United States of America, with studies revealing that most female students need information on how to handle sexual harassment (Exner and Cummings, 2011; Rowe et al., 2012).

2.4.3 Information Needs Related to Health Care Providers and Facilities

Multiple studies indicate that untreated health problems are highly prevalent in student populations (Eisenberg, Golberstein and Gollust, 2007; Blanco et al., 2008; Hunt and Eisenberg, 2010). A study that was carried out by Blanco et al. (2008) found low treatment rates across all psychiatric disorders, with fewer than half of those with mood disorders and less than 20% of those with anxiety disorders receiving treatment. They also found that college students with alcohol or drug use disorders were significantly less likely to receive treatment.

Nwezeh (2008: 208) observes that university students lack appropriate knowledge about health and where to obtain timely information or advice. Several studies have identified barriers to help-seeking in student populations, including lack of time, privacy concerns, lack of emotional openness, and financial constraints (Komiya, Good and Sherrod, 2000; Givens and Tjia, 2002; Megivern, Pellerito and Mowbray, 2003; Tjia, Givens and Shea, 2005; Mowbray et al., 2006). A study that was carried out by Hunt and Eisenberg (2010: 6) found that common barriers to treatment include a lack of a perceived need for help, scepticism about treatment effectiveness and being unaware of services. The problem of lack of awareness of health services is supported by a study which was carried out by El Kahi et al. (2012). Their study highlighted that most university students in Lebanon fail to utilise health facilities because they are not accessible.

2.4.4 Information Needs Related to Insurance Coverage

There is a growing trend in college and universities that students should demonstrate proof of health insurance prior to enrolment (McIntosh, Compton and Druss, 2012). However, evidence suggests that most students do not have adequate information on health insurance options. Hunt and Eisenberg (2010) revealed that one of the greatest barriers to health treatment by university students was lack of information on insurance coverage.

A study that was carried out by Eisenberg, Golberstein, and Gollust (2007: 598) on help-seeking and access to mental health care in universities confirmed that students do not know about the availability, potential effectiveness, and insurance coverage of their options.

2.4.5 Information Needs Related to Health Information Sources

With the proliferation of health information on the Internet and the mass media, it is becoming increasingly difficult to know when an information source can be trusted (Robertson, 2008). Baxter, Egbert and Ho (2008: 428) point out that the Uses and Gratifications (UG) Theory is one perspective that researchers have found useful for exploring how students choose the various information sources. They argue that individuals are active users of various information sources and, as such, consciously choose the sources that are likely to satisfy their perceived needs and desires.

Studies have shown that there are several factors that influence students' choices of health information. The factors include personal characteristics of the information provider (Kicklighter et al., 2010; Helleve et al., 2011), believability of the source (The American College Health Association, 2010; Kwan et al., 2010), and the qualifications of the information providers (Zullig, Reger-Nash and Valois, 2012). However, authoritativeness of health information has not been given prominence by other authors; for example the United Kingdom Department of Health concedes that although messages that come from government are authoritative, they are not popular with health consumers because they can seem "preachy, boring and too much like hard work" (United Kingdom, Department of Health 2004).

There is no consensus in the literature as to the most determining factor in choosing a health information source. A study that was carried out at two Turkish universities revealed that the most frequently specified sources of information on sexual and reproductive health issues in both universities were books, magazines and encyclopaedias, peers or friends, school or teacher, respectively (Hacettepe University, 2002). However, a study that was carried out by Yesus and Fantahun (2010) showed that the majority of students (72%) preferred to discuss sexual and reproductive health issues with peers and parents.

The Internet is increasingly becoming a popular source for health information (Hanif et al., 2009: 231). A study that was carried out by Kwan et al. (2010: 557) in Canada revealed that the Internet is the most common source (79%) of health-related information. Lenhart et al. (2007: 39) supports this by asserting that more and more adolescents and young adults use the Internet to communicate health information with peers and friends individually and in groups through social networking, creating blogs, sharing photos, and participating in public discussion boards.

2.5 Unrecognised Information Needs

Unrecognised information needs are those needs that individuals are unaware of or the needs that individuals already satisfy without consciously seeking health information. Individuals might not know that they need that information and they may not make a conscious move to seek that information because it is being met already. This includes information unconsciously received through the mass media, television adverts, peers, family (Alzougool, Chang and Gray, 2008: 4). Unrecognised information needs also include gaps in health information literacy skills (Brabazon, 2007).

In many instances, students may not realise that they have health problems. The Royal College of Psychiatrists (2011: 20) reports that college students are at high risk of developing serious mental illnesses such as schizophrenia and bipolar disorder, which are often difficult to diagnose in their early stages. In some cases, students with mental disorders are enrolled in

courses that require the student to interact with other students, thereby causing problems in their learning (Royal College of Psychiatrists, 2011: 82).

Other health problems that often go unnoticed among students include depression, conduct disorder, oppositional deviant disorder, posttraumatic stress disorder, substance abuse anxiety, eating disorders, obsessive-compulsive disorder, attention deficit hyperactivity disorder, phobias, self-harm, panic attacks (Davis, 2003; Brunt and Rhee, 2008).

The Royal College of Psychiatrists (2011: 21) raised a concern that students with unrecognised and untreated mental illnesses are likely to increase (Yesus and Fantahun, 2010) costs in a number of ways. There will be a loss of return on the public investment in higher education. Drop out from education will lead to diminished earning capacity and an increased risk of dependence on state benefits. This sentiment is also supported by Griffin (2013) who raised the point that failure to recognise health needs leads to negative outcomes amongst adolescents.

2.5.1 Information Needs That Individuals Already Satisfy

Students passively receive health information from a variety of sources. Traditionally, adolescents used to receive health information, especially on reproductive health, from aunts, uncles and other elders. There were time periods when these elders would sit down with young people and share with them information on matters that relate to family relations, sex, marriage and their general wellbeing (Gelfand, 1979: 138).

Nowadays adolescents are receiving much of this information from parents (Yesus and Fantahun, 2010), peers and teachers (Hacettepe University, 2002), and the mass media, especially radio and television (Legarde, Pison and Enel, 1998; Mitchell et al., 2001; Robertson, 2008). Television has been cited as the most common source where adolescents passively receive health information through edutainment programmes. A study that by Bouman, Maas and Kok (1998) revealed that introducing health-related storylines into popular TV programmes had a huge impact on behaviour change amongst youths.

2.5.2 Information Needs That Relate to Information Competencies

Brabazon (2007) observes that students do not know as much about the Internet, Web and Google as they think they do, and are not as good at searching for information as they think they are. However, successful acquisition and use of health information requires the ability to access and evaluate information sources (Austin et al., 2012: 549). However, several studies reveal that students do not possess the necessary skills to assess and effectively utilise health information (Brabazon, 2007; Rowlands and Nicholas, 2007; McCannon, 2009; Austin et al., 2012).

The main reason why individuals are not able to access and effectively use health information is that health information is difficult to understand because of medical jargon (Eli, 2012). Therefore, understanding the validity and applicability of medical information available can be difficult for those without a medical degree or extended training in the medical field (Hanif et al., 2009).

As the gap between physicians and patients continues to widen, the Internet is increasingly becoming a popular source for health information (Hanif et al., 2009). More and more adolescents and young adults use the Internet and the web to communicate health information with peers and friends (Lenhart et al., 2007). This trend is supported by a study that was carried out by Fox and Rainie (2007) which revealed that 70% of the general public's decision about treatment is influenced by information that is found on the web. This shows that most patients had a high regard towards health information they found on the Internet.

However, the reliability of health information on the Internet has been a cause for concern for health promoters (Hanif et al., 2009: 548). Incorrect or misleading information may lead to potentially dangerous health behaviour, for example, patients reading information intended for health professionals may misunderstand information or may get wrong expectations regarding treatment options (Gordon, Barot and Fahey, 2001). This problem is exacerbated by the fact that even health websites with high standards often contain inaccurate information. Meric et al. (2002) evaluated 184 breast cancer websites for quality of contents using the *Journal of American Medical Association (JAMA)* benchmarks and found

significant variation in accuracy. Of the 184 sites, 12 (7%) contained inaccurate medical statements.

University students should therefore possess adequate health information literacy skills so that they can be able to evaluate and use health information successfully. However, a study by Spring (2010: 160) concluded that many students have limited understanding of the architecture of medical bibliographic databases and this has led to limited understanding of controlled vocabulary such as MeSH (Medical Subject Headings) and other thesauri. In a study carried out by Kamau and Ouma (2009), users were asked whether they are able to use the e-resources without any assistance and 50% of the respondents indicated that they are not able to use the e-resources without any assistance.

The immediacy of web-based information and the speed at which things happen online has led to a shorter attention span and lack of patience amongst the youth, who are not enthusiastic about spending time looking for information or reading it (Spring, 2010). The study by Rowlands and Nicholas (2007: 15) into students' information-seeking behaviour found that they displayed a 'bouncing' or 'flicking' behaviour when using online information. Specifically, this involved moving quickly between web pages and giving them only a perfunctory glance. The study found that students conducted many search sessions but viewed few pages per session.

Brabazon (2007: 57) contends that most youth, whom he refers to as the 'Google Generation', has replaced thinking with clicking, and consequently the capacity to "sift, discard and judge" is lost. Brabazon observes that students do not spend appropriate amounts of time considering the accuracy, relevancy and authority of the information sources they are using. However, a study that was carried out by Ickes and Cottrell (2010: 491) in the United States of America showed that university students had a high health literacy score of 93.83, which was considered satisfactory functional health literacy.

2.5.3 Information Needs That Individuals Choose not to Demand

Alzougool, Chang and Gray (2008) argue that sometimes individuals may realise a need for health information but choose not to demand or look for information to address that health problem. For example, Eisenberg, Golberstein and Gollust (2007: 598) found that students with apparent unmet needs for health services reported that they believed that medication and therapy are only somewhat helpful or not at all helpful on average for people of their age with depression. This shows that sometimes students choose not to look for health information if they feel that they are able to cope with a certain medical condition.

There are a number of factors that prevent university students from looking for certain types of information. Kicklighter et al. (2010: 98) found out that college students do not bother looking for nutrition information, and often select foods based on taste, time, convenience, and cost, rather than nutritional value due to competing priorities and stress. This observation is supported by Krukowski et al. (2006: 917) who sampled 316 college students and found out that 52% reported that they did not generally use food labels to make food choices.

This complacency may also stem from confidentiality of the information involved. The National Alliance on Mental Illness (2012: 22) in The United States of America reports that it is extremely difficult for students to come out and talk about mental health problems because these are sensitive in nature. Zindi (1994: 178) supports this point by arguing that many female college students under-report sexual harassment cases and feel helpless when trying to address the problem due to fear of victimisation.

2.6 Health Information Dissemination Strategies within Universities

Yesus and Fantahun (2010: 89) found out that universities are the most common source of health information amongst students. Misch (2009) stressed the importance of campus based health promotion programmes. Therefore, most universities have come up with methods of transferring health information to students. However, in some cases there have been gaps in the availability of student health promotion services and their actual use. This section

evaluates the methods that are being used by universities to disseminate health information to students.

2.6.1 Traditional Student Counselling Services

The American College Health Association (2010: 583) cites that university counselling services and student mental health issues have garnered considerable attention over the past several years. Various studies have drawn attention to the growing mental health needs of students and the positive impact of counselling services on college student success (Sharkin, 2004). Davenport (2009) argues that, university counsellors are increasingly being called upon “...to assess “risk” and protect the college community from harm”.

College mental health problems have not only grown in complexity but also in volume and severity and increasingly, colleges and universities are reporting on unprecedented numbers of students in psychological distress (University of California, 2006). For example, 95% of campus psychological counselling centres surveyed in 2008 reported a significant increase in mental health issues among their students (Gallagher, 2008: 14).

Student counselling services have been pivotal in providing counselling to students on a variety of health topics that include alcohol and drug treatment; eating disorders treatment; psychiatric services; psychological assessment; and career counselling (American College Health Association, 2010: 583). However, in some cases, these services are being underutilised. A study that was carried out by Rosenthal and Wilson (2008) showed that university counselling services were being underutilised.

Most universities in Zimbabwe tend to separate the student counselling department from student health services such as clinics. For example, the National University of Science and Technology and the Midlands State University have separate counselling and health services. However, this traditional medical-model dichotomy separating health and illness has proved to be ineffective and has been attacked because health is influenced by a lot of interrelated factors (Nyamwaya, 1997: 180). Therefore, health promoters have recommended the integration of health services and student counselling services to come up with ‘wellness

centres' (Nyamwaya, 1997; Kupchella, 2009; American College Health Association, 2010). One good example is the integrated wellness centre at the Princeton University, available at <http://www.princeton.edu/uhs/> (University of Princeton, 2013).

2.6.1.1 Departmental and Faculty Services

Faculty members have traditionally played a key role in assisting students with stress. Staff members work closely with students and as a result, they often get the first glimpse of students in distress (University of Maryland Counselling Centre, 2013). The Ohio State University Counselling and Consultation Service (2013) reports that students perceive faculty staff as individuals who can lend a helping hand or who can listen to their problems. Faculty members are expected to express interest and concern in helping struggling students before it is too late to save their lives. Faculty members have been tasked with identifying problems that include behaviour posing a threat to the student, suicidal tendencies and inability to care for oneself. The staff members should provide adequate help through empathic listening, facilitating open discussion of problems, instilling hope, conveying acceptance, and offering basic advice. However, faculty services are inadequate because in some cases, students need professional help to overcome complex health problems and students need to be referred to professionals (University of Maryland Counselling Centre, 2013).

2.6.2 Posters, Notice Boards and Print-outs

The Jed Foundation (2011: 19) states that many campuses are using communication campaigns that include brochures and posters to address specific health problems. The Foundation argues that these traditional means of communicating health information are cost effective. Posters have been successfully used by the University of Wisconsin-Oshkosh to increase student help-seeking (The Jed Foundation, 2011:19).

Marshall and Stylianou (2010: 51) also argue that notice boards are an excellent way to promote health around the campus. They cite an example of using notice boards in promoting tobacco cessation: posters may be hung in campus buildings, designating them as tobacco-free or putting up posters showing the aging effects of smoking. This is an effective strategy

because as mentioned earlier, students may not make a conscious move to seek out health information.

The Arkansas Clean Air on Campus Act (2009: 16) reports that campus signage was successfully used to raise awareness of the tobacco-free policy within the state. Its efforts encouraged quitting tobacco, not simply abstaining from use while on campus, by promoting tobacco cessation resources through posters. Johannessen et al. (1999: 10) also supports this argument by asserting that students are highly comfortable with the use of posters in disseminating health information. Apart from notice boards and posters, various print resources have been used to disseminate health information within campuses. Printed media such as brochures, flyers, newsletter articles, and newspapers have also been used to raise awareness on key health issues around campus. Bulletin board displays can be placed in strategic locations such as residence hall bathrooms, game rooms, laundry rooms, elevators and front desks. Other methods include placing informative stickers on campus shuttles, bumper stickers, magnets, Frisbees, and mouse pads (Johannessen et al., 1999).

2.6.3 Workshops

Workshops are one of the methods that are widely used to disseminate health information in colleges and universities. The University of California Berkeley (2013) has a wellness centre which regularly presents workshops as a way of promoting health amongst students. Peer educators and professional staff facilitate discussions and lead presentations. Presentation styles include personal testimonials, lectures, and group discussion and interactive exercises. The workshops and presentations are available on a wide variety of health topics, including safer sex and sexual health, stress management, preventing sexual assault, intimate partner violence, and sexual harassment, among other health topics.

The Duke Student Wellness Centre (2013) also runs regular workshops on a variety of health topics. The staff and the students work together to run the workshops, with common topics requested by students being on alcohol abuse prevention, sexual health, and stress management. The topics that are covered by the regular workshops can be adapted to meet the needs of student groups. Although workshops are an effective method of disseminating

health information, they however cannot cater for a large group of users, such as university students. Moreover, they are expensive to organise.

2.6.4 Course-Based Health Education Programmes

Kulinna et al. (2009: 128) argues that “...university students must become independent consumers who are knowledgeable about their own health and well-being”. They state that health education programmes can help students develop the knowledge, skills, attitudes, and behaviours needed to adopt healthy behaviours. This claim is corroborated by Doherty and Low (2008) and Lambert (2001) who found that educational interventions enhance knowledge and help-seeking among college students.

Fitness and wellness courses have been seen as agents of change for modifying unhealthy lifestyles among college students (Kulinna et al., 2009: 128). This idea is also supported by Cardinal, Jacques and Levy (2002: 118) who declare that there is evidence that well-taught fitness and wellness classes have the potential to positively affect the attitudes and behaviours of the students that enrol in them. For example, Pearman and Valois (1997: 81) showed that individuals who had taken a required college health or physical education course had more regular physical activity behaviours than those who had not taken this required course.

Kicklighter et al. (2010: 100-101) confirms that educational modules are an important tool for health information dissemination and behaviour change. Her study demonstrated that a nutrition module raises student awareness on dietary issues and participants from several groups stated they have begun to consume regular meals and healthy snacks.

On the negative side, Svenson, Carmel and Varnhagen (1997: 65) report that “...evaluations of AIDS-related educational programmes for university students are often not very encouraging”. Baldwin, Whiteley and Baldwin (1990), for example, found that taking a university education course did not affect students’ sexual behaviour, including with respect to condom use, number of sexual partners, or frequency of casual sex. This shows that the success of health education programmes depends on a particular context or probably, success depends on their nature in terms of content, planning and implementation.

2.6.4.1 Conceptually Based Wellness Courses

Conceptually based wellness courses, which are also referred to as lecture laboratories have been designed to promote physical education and wellness among college students. The courses are an alternative to the traditional skills based physical education courses. The courses consist of lectures and laboratory experiments. The lecture part of the course is designed to promote learning of conceptual information related to fitness and wellness and health behaviour change theory as well as learning of self-management skills that result in real world application. The laboratory sessions are designed to provide students with hands on skills on matters related to wellness and physical exercises (Kulinna et al., 2009: 127).

Kulinna et al (2009: 127) argue that conceptually based wellness courses are effective in promoting wellness among college students. They highlighted the health benefits of moderate physical activity, in particular, in reducing the risk of chronic diseases such as heart disease, diabetes, hypertension, and cancer.

2.6.4.2 Curriculum Infusion

The Network for Dissemination of Curriculum Infusion (NDCI) (1999) defines curriculum infusion as “the process of integrating [health] information... into the curriculum of regularly offered courses”. This information dissemination method has proved to be useful in changing negative health behaviours among students. A study that was carried out by White, Park and Cordero (2010: 522) showed that curriculum infusion is effective in reducing negative outcomes related to drinking behaviours such as, driving under the influence, fighting, sexual and physical assault, self injury, and unprotected sex in college students. The results of their study confirmed that curriculum infusion can be successfully used by faculty to contribute to campus alcohol prevention efforts.

2.6.5 Peer Education Programmes

Peer health education is defined as the teaching or sharing of health information, attitudes, values, and behaviours by members of groups who are similar in age or experiences (White et al., 2009). Peer education has proved to be a cost effective method of promoting health in

universities. For example, a study that was carried out by Milburn (1995: 407) reveals that peer health educators report positive personal outcomes such as increased health knowledge, professional skills, self-esteem, and feeling empowered when they reach out to other students.

White et al. (2009: 497) posits that peer health education is effective because peer health educators are in places that are inaccessible to university administrators and health professionals. Moreover, personal relationships allow peer health educators to closely identify and empathize with the experiences of their student counterparts (Milburn, 1995). Qualities that include perceived expertise, trustworthiness, attractiveness, dynamism, charisma, similarity, and empathy are factors that influence the credibility of role models (Lindsey, 1997).

The strength of peer education programmes was also highlighted by a study that was carried out by Boyle et al. (2011: 520) which revealed that peer educators also boosted the self-efficacy of students by enabling performance attainments, providing vicarious experience, and delivering verbal persuasion. The study confirms that peer education programmes are one of the most effective methods of instilling behaviour change amongst college students.

2.6.6 Gatekeeper Training

Gatekeeper training has been employed as a measure against suicide in universities for decades. This method involves the use of college based resident advisors (RAs) in teaching principles of suicide risk identification, and crisis intervention. The objective of gatekeeper training is to enhance participants' knowledge, attitude, and skills in identifying individuals at risk and referring them to appropriate services (Pasco et al., 2012: 134).

Gatekeeper training has been demonstrated to result in enhanced knowledge about suicide warning signs, enhanced knowledge regarding how to intervene with someone thinking about suicide, and enhanced self-efficacy for responding to individuals in crisis. The Jed Foundation/Suicide Prevention Resource Centre and the Surgeon General's National Strategy

for Suicide Prevention recommended the use of this method for suicide prevention in universities (Pasco et al., 2012: 134).

2.6.7 Social Marketing

Social marketing is a health promotion technique that involves the use of community members in collecting, analysing and disseminating health information. According to Maibach, Rothschild and Novelli (2002: 439) “...the goal of social marketing is to change certain behaviours by influencing a target population’s voluntary health behaviours”. Social marketers attempt to change negative health behaviours and to reinforce positive health behaviours. Researchers have shown social marketing to be effective in promotion of awareness and knowledge, especially among youths. Shive and Morris (2006) evaluated a social marketing campaign and found out that the campaign significantly increased fruit intake by college students.

The social marketing approach has recognised advantages and disadvantages. An advantage of this consumer-driven approach is that campaigns and materials are tested with a target population and are therefore likely to have impact with that population. However, the limitation of using a social-marketing approach lies in the investment of a large amount of time and resources to gather data, often at the expense of the intervention itself (Shive and Morris, 2006: 34).

2.6.7.1 The Photo-voice Method

Photo-voice is a method of conducting community-based participatory research with people that have little influence within their own community. The method involves participants using cameras to photograph their community’s needs, then, the participants use the photos as talking points to educate fellow community members and policy makers about the issues addressed in the photos. The goals of the photo-voice method are to empower participants, allow participants’ voices to be heard within the community, and to enable participants to inform and affect policy change (Wang and Burris, 1994).

The photo-voice method has a limitation that it is difficult to evaluate its impact at the individual level. For instance, it is difficult to ascertain if the method inspires individuals to consider quitting smoking or even for smokers to be mindful of their cigarette litters. However, this method was successful in motivating students to address health policy on a college campus (Seitz et al., 2012: 540).

2.6.8 Selective Dissemination of Information

Selective dissemination of information (SDI) is a key method in health promotion because individuals present different health beliefs and practices. The specific beliefs that make a targeted population engage in physical activities, for example, should be selected after considering the population's socioeconomic background, the expected benefits of doing exercise, and the level of self-efficacy they have with respect to physical activity (Jung and Heald, 2009).

Results from a study that was carried out by Jung and Heald (2009: 527) reveal that students exposed to the tailored messages were more likely to report positive changes in their self-efficacy and behavioural intentions related to physical activity. These findings are consistent with a study that was carried out by Tydén et al. (1994) whereby the SDI campaign was successful in improving student awareness on STDs and increased knowledge about the high frequency of STDs in the student population.

Although SDI is an effective method in improving general student awareness on particular health matters, there is little evidence that SDI catalyses behaviour change. A study that was carried out by Tydén et al. (1994), for example, showed that although the information campaign was well received by students, only 1% of the target population went for STD checkups at the local STD clinic. Moreover, the method failed to induce any measurable changes in attitudes during the short observation period.

2.6.8.1 Cell phone Text Messaging

Sturges (2011: 146) argues that the cell phone is effective in disseminating information due to its ease of use, robustness, and portability. Cell phones are an effective tool for disseminating

health information because they are cost effective. Text messaging is a cheap, fast and efficient method of transferring health information to the student population.

Commenting on the success of a text based tobacco cessation programme, Obermayer et al. (2004: 76) states that whilst websites require participants to seek out a computer with Internet access, text can be “pushed out” to users. A study that was carried out by Riley, Obermayer, and Jean-Mary (2008: 24) indicates that mobile phone text messaging is a promising modality for delivering smoking cessation interventions to young adult smokers. The authors also argue that the technology has the potential to reduce the burden on health professionals to deliver health interventions while expanding the reach of these interventions to those who may not engage in more traditional health promotion programmes.

2.6.9 Discussion Groups

Contemporary health promotion practice places a high value on participatory processes and bottom-up planning which enables communities to identify problems, develop solutions and facilitate change (Blackburn, 2000). Health discussion groups therefore have been seen as an effective instrument in increasing participation in health-related decision making and planning.

Meier, Stock and Krämer (2007) conducted a study to test the effectiveness of a health discussion group at the University of Bielefeld in Germany. Their study concluded that the discussion group proved to be a useful instrument for student participation in university-based health promotion. The study recommended the need for special emphasis towards decreasing barriers for participation. They also observed that implementation of a viable health intervention strategy is highly dependent on well-established structures of health promotion, such as a steering committee, and the commitment of the university management.

2.6.10 Web-based Interventions

Recent technologies have been pivotal in making health information more accessible. Recent developments on the web are making the platform an even more cost effective information dissemination strategy. Web-based applications that are promising to radically change health

information dissemination within universities include traditional websites, social media applications, blogs, wikis, Relatively Simple Syndication (RSS) feeds, podcasts, and Voice over the Internet Protocol (VoIP) (Thackeray et al., 2008).

The web is an important information dissemination platform because it offers the opportunity to expose large numbers of students to potentially life-saving information. Results from a study that was carried out by Croom et al. (2009: 445) on the impact of an online alcohol education course revealed that the intervention group showed significantly higher alcohol-related post-course knowledge compared to the control group.

2.6.10.1 Websites

Websites have been widely used to disseminate health information within universities. The National Alliance on Mental Illness (2012: 10) carried out a study in order to better understand how students become aware of resources available to them on campus; survey respondents most often cited their college's website as their primary source of health information. Several recent studies also support the effectiveness of websites in disseminating health information in universities (Bingham et al., 2010; Hartjes and Baumann, 2012; Radhu et al., 2012). This emphasizes the need for colleges to develop websites that include comprehensive, updated health information.

An example of a promising development is the American Foundation for Suicide Prevention's College Screening Project, which uses a Web-based intervention to increase help-seeking behaviour in college students (Garlow et al., 2008). Another development is the National College Depression Partnership, led by New York University, which represents a growing network of campuses collaborating in an effort to deliver screening, early intervention, and more continuous, integrated treatment of depression for students (National College Depression Partnership, 2013).

However, websites have their limitations. One of their biggest limitations is that of inadequate use. In a study that was carried out by Obermayer et al. (2004: 76) most students

revealed that they failed to participate in a website-based health intervention programme because the website was less accessible.

2.6.10.2 Electronic Mail

Studies have shown that every student has the capacity to send and receive e-mail messages and many students are veterans of the World Wide Web, where they seek out all types of information, communicate with friends and family, and participate in chat groups (Christmas, Turner, and Crothers, 2000: 39). Electronic mail has been widely used as a means of disseminating health information to students. The Duke University Health Service, for example, has an e-mail system for disseminating health information (Christmas, Turner, and Crothers, 2000: 39).

Although there are a number of ethical concerns that are involved in using e-mail, Christmas, Turner, and Crothers (2000: 39) argue that students have little concern about breach of confidentiality on this electronic platform. The authors argue that it would be highly unlikely that campus based e-mail messages would be intercepted due to the sheer volume of email messages that are transmitted around campus per day.

2.6.10.3 Web 2.0 and Social Media

Web 2.0 tools are second generation Internet-based applications in which users control communication. These tools hold promise to significantly enhance dissemination of health information. Web 2.0 allows individuals to share, link, collaborate, and to create content. This gives the tools an advantage over traditional websites because, rather than receiving a lecture through static web pages, users are engaged collectively in a conversation that leads to the generation of online content (Thackeray et al., 2008: 339).

The Web 2.0 social media applications provide users with the technology to both produce and distribute information. These technologies allow for collaborative writing (for example, wikis), content sharing (for example, text, video, and images), social networking (for example, Facebook), social bookmarking (for example, ratings, tagging), and syndication (for example, RSS feeds) (O'Reilly, 2005; Smart, 2006; Dawson, 2007).

There are several reasons why Web 2.0 technologies have the potential to improve health information dissemination within universities. Firstly, the beneficiaries in the information dissemination process should be active recipients so that they could accept the information products and probably change their behaviour (Thackeray et al., 2008; McKenzie, Nieger and Thackeray, 2009). Secondly, tools such as social media and blogs allow students to share their experiences, thereby making information dissemination programmes cost effective (Thackeray et al., 2008: 340). Thirdly, since information dissemination is a two-way process (Monahan and Sheirer, 1988; King, Hawe and Wise, 1998), students can use blogs, ratings, and social networking sites such as Facebook to provide feedback to health information providers.

A success story in the use of Web 2.0 technologies is the so called 'Life Cafe' at Kansas State University which uses Web 2.0 information technologies as an awareness tool for the creation of protective factors against suicide, including a virtual student community (Shalin, 2009). Since the University Life Café site's launch the Google Analytics report has tracked a significantly increasing number of visitors on the site, proving its growing popularity (Shalin, 2009).

Although Web 2.0 technologies have the potential to offer many benefits to health information providers within universities it is, however, difficult to ignore the indirect and sometimes unintended negative health impacts of social media. The main danger lies in the participatory nature of social media, which entails an open forum for information exchange. This increases the possibility of wide dissemination of non-credible, and potentially erroneous, health information (Kortum, Edwards and Richards-Kortum, 2008).

2.7 Criticism of the Current Information Dissemination Methods

The World Health Organisation (2005) through the Bangkok Charter for Health Promotion advocates settings-based approaches to health promotion. Universities the world over have realised the need to promote health behaviours among students. This gave birth to the concept

of health promoting universities, a phenomenon that is steadily spreading in the world (Leger, 2006; Meier, Stock and Krämer, 2007; Shalin, 2009).

However, current health information dissemination practices have several weaknesses. Their major weakness is that they tend to use the pathogenetic approach to health promotion. It is common practice within universities for health practitioners to wait for students to come seeking for treatment or counselling after they face a specific health problem. According to the the American College Health Association (2010: 583), university counselling services are a common feature in most universities as they produce the bulk of health information.

The problem with the pathogenetic approach to health information dissemination is that it is passive and reactive. Supporting the old adage ‘prevention is better than cure’, Antonovsky (1979, 1987) proposed the Salutogenesis approach whereby universities should equip university students with life skills and supportive environments for disease prevention.

Antonovsky’s argument was furthered by Lindstrom (2010) who emphasizes that quality of life or wellbeing is determined by various factors such as cure, protection, disease prevention, health education and health promotion. He placed health promotion at the peak of wellbeing, supporting the importance of information in shaping the health status of individuals (see Figure 2.7). At the core of Lindstrom’s theory is the argument that individuals should learn how to swim in the river of life. This can be achieved by developing essential health information literacy skills such as the ability to access, evaluate, and use health information to solve existing health problems and to prevent risky health behaviour.

Another problem is that of lack of explicit structures for disseminating health information. Currently, most universities in Zimbabwe tend to rely on student counselling services and university clinics as the source for health information for students. This entails that universities in Zimbabwe are still ill-equipped in dealing with health information needs of students (Savadye, 2011; Chibaya, 2012).

Lack of explicit information dissemination infrastructure makes health information within the university difficult to access. Moreover, without clear structures, there is bound to be lack of coordination and less cost effectiveness in health promotion (Svanstrom, 1999; Hoffman and Jackson, 2003; Garrard et al., 2004; Jackson et al., 2006).

Jackson et al. (2006) highlight that lack of integrated information dissemination methods leads to isolated and less cost effective ways for promoting health within universities. Lack of integration has also been attacked by Nyamwaya (1997: 180), who argues that health is a continuum that is influenced by multiple factors. As such there should not be isolated health promotion efforts within the university.

The Department of Health (2004) of the United Kingdom argues that health information should not sound ‘preachy’, and boring. However, Ehrhardt, Yingling and Warne (1991) are concerned that health promotion in universities has been unable to reach its full potential in helping young people in universities because health providers have tended to issue ‘commandments’.

In support of active user participation in the information dissemination process, Monahan and Sheirer (1988) likened a dissemination system to a bridge which enables two-way communication between health promoters and the recipients of health promotion efforts. However, health promotion efforts which exist in most universities tend to be one-way transactions. Students do not have much input in the development and implementation of the programmes; moreover, there are no platforms whereby students can provide feedback to health promoters.

Lack of visibility has also been cited as another problem. In a preliminary survey that was carried out by the researcher at the National University of Science and Technology, the researcher observed that most students are not aware of the existence of health facilities within the university campus, let alone a health information dissemination platform. In a study that was carried out by El Kahi et al. (2012), the findings revealed that most university students in Lebanon fail to utilise health facilities because of lack of awareness.

2.8 Applicable Information Dissemination Principles and Strategies

Development of an effective information dissemination framework should be informed by a number of principles and strategies. This section covers the major principles which have been recommended by renowned health information providers. Insight was also gathered from information dissemination principles and strategies which have worked elsewhere.

2.8.1 Prevention and Response Focused

The Jed Foundation and Education Development Centre (2011: 3) recommended that health information dissemination programmes should be prevention-focused in addition to being response-focused. This entails that the programme should include both proactive and reactive information dissemination channels, that is, they should cater for both recognised and unrecognised health information needs.

The National Centre for the Dissemination of Disability Research (2001: 17) observes that many campuses also offer health education workshops to help students develop a variety of life skills. A campus based information dissemination programme that focuses on life skills development may ease the burden on student clinics and counselling centres. Picklesimer and Miller (1998) provided examples of critical life skills that should be addressed by information dissemination programmes (see Box 2.2).

Box 2.2: Critical Life Skills

- Problem-solving/decision-making
- Assessing and analyzing information
- Identifying and solving problems
- Setting goals
- Managing time
- Resolving conflicts
- Identity development/purpose in life
- Maintaining one's self esteem
- Clarifying values
- Developing meaning of life
- Interpersonal communication/human relations
- Establishing relations
- Physical fitness/health maintenance

Source: Miller (1998)

2.8.2 Integrated Information Dissemination Systems

Dooris (2001: 6) is of the view that there should be clear integrated information dissemination systems in universities that allow for coordinated effort. On the same note, Leurs et al. (2005) proposed an integrated approach in developing an information dissemination model to improve school health promotion in the Netherlands. Tarhule (2005) used the integration approach to develop an information dissemination model for disseminating climate information.

The Jed Foundation and Education Development Centre (2011: 16) also believes that health promotion programmes should include a continuum of programmes. They believe that a combination of activities, policies, and interventions synergistically working together is more likely to produce results than any single intervention. The Jed Foundation formulated a comprehensive approach to college student mental health promotion and suicide prevention drawn from the strategic direction of the United States Air Force Suicide Prevention Programme. The Air Force programme succeeded in significantly reducing the suicide rate, domestic violence, homicides, and accidental deaths among Air Force personnel during the first five years of the programme (Knox et al., 2003).

Positive results from integrated information dissemination programmes were also drawn from a study that was carried out by Eisen et al. (2009: 455). The authors present an integrated, interdisciplinary approach to address the problem of increasing student mental health issues on college campuses. The project had a positive impact on student attitudes and actions and helped in strengthening and broadening the campus network required to ensure optimal student mental health.

Harmsworth, Turpin and TQEF National Co-ordination Team (2000) propose that if a dissemination strategy is going to be effective, each member of the team needs to feel a sense of ownership. They argue that each and every stakeholder (see Figure 2.7) should be involved at all stages when developing an information dissemination system.

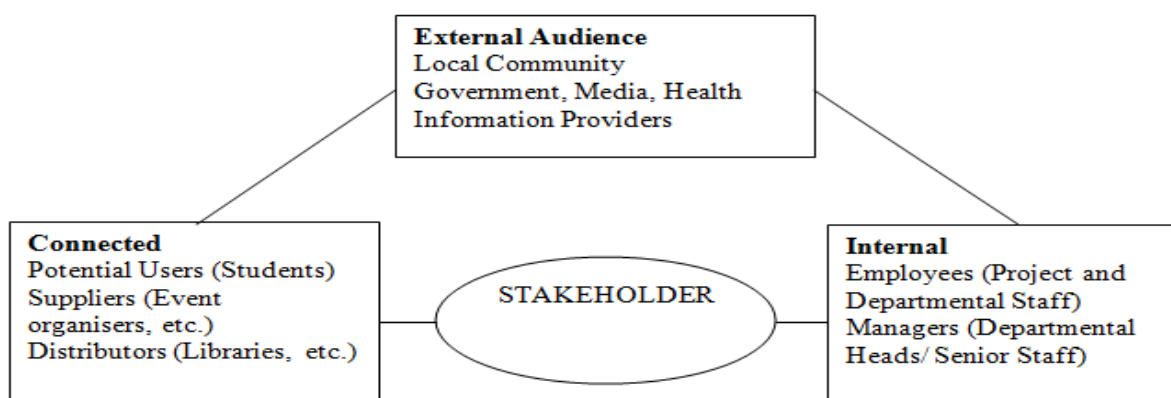


Figure 2.7: Stakeholders. Adapted from: Harmsworth, Turpin and TQEF National Co-ordination Team (2000).

Butterfoss et al. (1993: 317) assert that coordinated taskforces “...help mobilize more talents, resources and approaches to influence an issue than any single organisation could achieve alone” and “demonstrate and develop widespread public support for issues, actions or unmet needs”. The Jed Foundation and Education Development Centre (2011: 4) also suggests that taskforces can ensure efficient use of resources and elimination of duplicate efforts. Several studies have shown that health promotion efforts need to be integrated for them to be cost effective (Nyamwaya, 1997; Svanstrom, 1999; Hoffman and Jackson, 2003; Garrard et al., 2004; Jackson et al., 2006).

2.8.3 User centred Design and Active User Involvement

Westbrook and Lumbley (1990) state that information dissemination programmes should be “...oriented toward the needs of the user, incorporating the types and levels of information needed into the forms and language preferred by the user”. Harmsworth, Turpin and TQEF National Co-ordination Team (2000) support this view and argue that the most successful dissemination strategies will be those that actively engage users and deliver what the users both want and need. Jackson et al. (2006) also stressed that health promotion interventions are only effective when they are relevant to the context in which they are being used. This entails that they should be tailored to the unique needs of the users.

Harmsworth, Turpin and TQEF National Co-ordination Team (2000) further argue that when developing health information dissemination systems, the developers should ensure that users

are engaged in the early stages of the project. They argue that starting early increases the impact of dissemination, and propose the use of seminars and conferences to help stimulate ongoing interest in the users.

2.8.4 Management Support and Commitment

Langford (2006) is of the view that campus based information dissemination strategies cannot be sustainable without institutional support and commitment. In support of this view, DeJong (2007) called for active support from the university presidents and other senior administrators. The Jed Foundation and Education Development Centre (2011: 4) explains that earning management support is a key step towards attracting continuing financial and staff support from senior administrators. They further argue that if the activities and policies show results, key stakeholders are more likely to want to be involved, thereby contributing to programme sustainability.

2.8.5 Need for an Information Dissemination Policy

A dissemination policy can be a very effective and low-cost method of addressing issues of dissemination and utilization. The National Centre for the Dissemination of Disability Research (2001: 3-4) argues that an information dissemination policy is an important tool in ensuring ultimate utilisation of research findings. The organisation provided several reasons why an information dissemination strategy deserves its own policy:

- i. It facilitates a clarification of the intended groups of users for the information generated through the research function;
- ii. It establishes the value and measures that will be engaged to achieve “ease of access and simplicity of comprehension and use” — in other words, accessibility;
- iii. It reduces staff confusion about the correct course of action and, as a result, lowers staff costs and increase timeliness of response time;
- iv. It describes what steps one takes to ensure that the general public is aware of the availability of alternate formats of your material;
- v. It provides an opportunity to clarify how your dissemination policy facilitates accomplishment of the organisation’s mission;

- vi. It clarifies the extent to which one communicates the dissemination policy to the public, reinforcing awareness of the availability of accessible, timely information, and technical assistance to support its utilization; and
- vii. It provides an opportunity to describe how the success of the dissemination policy will be evaluated and with what frequency it may be modified.

2.8.6 Two-way Dissemination

Monahan and Sheirer (1988) likened a dissemination system to a bridge which enables two-way communication between health promoters and the recipients of health promotion. King, Hawe and Wise (1998) also stressed the need for a two-way information dissemination strategy to ensure the success of health promotion efforts within universities. The problem with one way transactions is that the voice of students is not heard and it would be difficult to cater for students' health concerns without a feedback platform.

The National Centre for the Dissemination of Disability Research (2001: 2) observes that "...dissemination approaches that implement a mechanical, one-way flow of information have not proven to be effective in encouraging widespread adoption and implementation of new programmes, ideas, and strategies". Therefore it is important to develop health information strategies that have feedback mechanisms to ensure their success.

2.8.7 Multi-component Strategy Using Multiple Dissemination Methods

A key finding of Hoffman and Jackson's (2003) review was that effective and cost-effective interventions for primary prevention of non-communicable disease used a combination of health promotion strategies at various levels in multiple settings. Specifically, Hoffman and Jackson found that interventions that were shown to be effective at reducing tobacco use, increasing physical activity, preventing cardiovascular disease and increasing food security involved a combination of health promotion strategies occurring at the personal, community and structural levels. These effective combinations of strategies included developing healthy public policy, creating structural and social conditions to support health and developing personal skills.

Harmsworth, Turpin and TQEF and National Co-ordination Team (2000) advised health information providers to think about disseminating health information in a variety of ways to suit the varied needs of the target audience. They raised the point that using a variety of information dissemination media increases the chances of success. This entails that when one is developing a strategy for disseminating health information, it is important to incorporate various information dissemination methods to cater for the myriad information needs of users.

2.9 Procedures in Developing a Needs-based Information Dissemination Framework

This section looks at the procedures that are normally taken when developing a needs-based information dissemination framework. Much insight was gathered from the Jed Foundation and the Education Development Centre of the United States of America. Moreover, their recommendations were corroborated by findings in the literature. It is important to note that the procedures that are highlighted are not linear per se, but can be iterative.

2.9.1 Problem Identification

An important step in developing a needs-based information strategy is identifying the problem and its context. Problem identification involves three important steps, that is, needs analysis, assessment of existing resources (information dissemination programmes) and readiness assessment. Aarø et al. (2006: 151) suggest that, "...a necessary and important first step when conducting evidence and theory-based interventions is the collection, analysis, and interpretation of available data that may contribute to the planning and design of the intervention programme". Several studies have been carried out to gather useful data for the development of effective health promotion strategies (Eisenberg, Golberstein, and Gollust, 2007; Hunt and Eisenberg, 2010; Downs and Eisenberg, 2012).

Power and Hunter (2001) suggest that a precursor to devising health promotion interventions is the identification of health information needs. Several studies reveal that needs analysis is the first important step in developing an information dissemination strategy. This claim is supported by several successful information dissemination projects which undertook needs

analysis during their early stages of development (Power and Hunter, 2001; Leurs et al., 2005; Alzougool, Chang and Gray, 2008).

The Jed Foundation and Education Development Centre (2011: 9) fears that campuses run the risk of implementing interventions prematurely if they do not clearly define the problem in existing health promotion programmes. Therefore, careful and thorough problem assessment provides campus leaders with objective data about the problems students experience, the risk and protective factors linked to these problems, and estimates of how common or prevalent these issues are. A problem assessment can also help campuses identify the programmes that are currently in place and assess their impact.

As has been previously mentioned, assessment of current resources is another strategy that can be used in problem identification. The Jed Foundation and Education Development Centre (2011: 10) propose the use of focus groups, among other data gathering tools, to identify loopholes in existing information dissemination strategies; they state that:

It is important to begin with a good sense of which programmes are already in place, how effective they are, and any gaps that might exist. Looking at programme gaps alongside relevant survey and other data can point to a need for adjustments. For example, a campus may have several programmes aimed at getting more students to ask for help, and at the same time, data may reveal that certain groups of students at higher risk are less likely to do so.

Edwards et al. (2000) argue that “...an honest assessment of the individual and institutional factors that are likely to facilitate or resist change – sometimes called a “readiness” assessment – can help to identify resources and obstacles ahead of time”. This author argues that readiness assessment can indicate how ready the community is to accept a health intervention strategy. Therefore, this is an important exercise to be undertaken during the initial stages of developing a needs-based information dissemination framework.

2.9.2 Identify Priority Problems and Set Long Range Goals

Goal setting is an important step in developing an information dissemination framework. (Harmsworth, Turpin and TQEF National Co-ordination Team, 2000: 1). According to the Jed Foundation and Education Development Centre (2011: 20), a goal statement should articulate specific, measurable goals whose achievement can be readily observed and measured. Goal statements use change language such as “increase the number of students who receive help for personal problems”, “decrease rooftop access” or “revise crisis response policy to improve clarity of staff roles”. According to Chinman, Imm and Wandersman (2004: 35), key questions to ask in setting goals include:

- i. What will change?
- ii. For whom?
- iii. By how much?
- iv. When will the change occur?
- v. How will it be measured?

2.9.3 Consult the Science to Identify Strategies and Interventions

There have been calls for evidence-based practice in the field of Health Sciences (Koonce, 2007; Souza, 2009). Therefore, before implementing an information dissemination programme, it is essential to explore whether a programme has strong empirical or theoretical support and addresses the unique problems of students. It is important to choose evidence-based practices to ensure that resources are invested in programmes that are likely to achieve positive changes.

The Jed Foundation and Education Development Centre (2011: 13) suggests that a thorough review of research on both campus and community interventions can help campuses identify evidence-based programmes. They argue that “...while practitioners at other campuses can be a valuable source of ideas for programmes, programmes and policies from other campuses need to be critically examined before they can be adopted”.

According to the Jed Foundation and Education Development Centre (2011: 13), health promotion strategies need to be informed by renowned health behaviour theories and best practices. They state that:

A fundamental principle in developing any new programme is to base the programme content and process on health behaviour change theories that attempt to explain and predict health behaviours. Planners can also look at what has worked in other areas.

2.9.4 Design of the Actual Framework

This stage involves the actual design of the information dissemination framework. This may be achieved by analysing the data that would have been gathered in the first stage (student needs analysis, resource assessment, and readiness assessment). The data should be merged with findings in the literature and proposals by key stakeholders (administrators, health information providers) to come up with a needs-based framework. This stage also involves the development of conceptual models and data flow diagrams.

Harmsworth, Turpin and TQEF National Co-ordination Team (2000) recommend that there should be proper documentation of the information dissemination framework to form a coherent product. They suggest that the framework should have the following headings:

- i. Aims and objectives of the project;
- ii. What the project proposes to disseminate;
- iii. Target audiences/groups;
- iv. Benefits to end users;
- v. Dissemination methods/activities;
- vi. Timescales and responsibilities;
- vii. Targets;
- viii. Costs; and
- ix. Evaluation and Criteria for Success.

2.9.5 Create a Logic Model and Programme Plan

A logic model (see Figure 2.8) is a diagram illustrating how each planned activity will contribute to long-term goals (Langford, 2006). Such a model acts as a guide which will

assist in understanding how and why each activity will result in specific outcomes. Therefore, a programme logic model also assists in developing an evaluation plan.

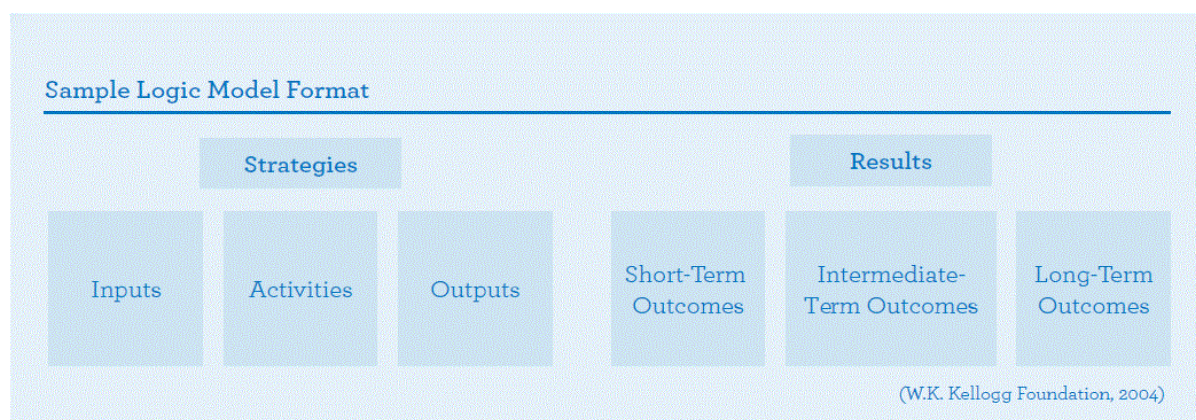


Figure 2.8: Logic Model (Source: Kellogg Foundation, 2004).

2.9.6 Develop an Evaluation Plan

Evaluation is a systematic process for collecting, analyzing, and reporting information to determine whether programmes are effective (DeJong and Langford, 2006). An evaluation plan should focus on both outcome and process evaluation (Chinman, Imm and Wandersman, 2004). The compelling reason for evaluation is to show that programmes are achieving their intended outcomes, thereby demonstrating that resources are being used wisely.

Langford (2006) recommends that evaluation should be planned as the programme is being developed. Evaluation is an important exercise because long-term financial support for programmes is likely to be available only if evaluation results warrant it. Harmsworth, Turpin and TQEF National Co-ordination Team (2000) posit that an effective dissemination strategy will only continue to be effective if it is viewed as being an evolving and constantly developing process. Therefore, there is need to put in place suitable mechanisms for reviewing the progress and the extent to which the disseminations strategy is meeting intended objectives. Therefore, key questions to be answered are:

- i. How will you know you have been successful?
- ii. What might success for a particular dissemination activity look like?

2.9.7 Create an Action Plan

The Workgroup for Community Health and Development (n.d.) proposed the need for an action plan to ensure that an information dissemination programme remains on track. The Workgroup believes that best action plans are “complete, clear, and current” with a clear outline of:

- i. All of the actions or changes that will occur;
- ii. Who will carry out these changes;
- iii. By when they will take place, and for how long;
- iv. What resources are needed to carry out these changes;
- v. Communication and information sharing; and
- vi. Who should know what.

2.9.8 Develop Implementation Plan

Implementation is a key stage in the development of an information dissemination framework, and as such it needs to be well planned. The plan includes the strategies that will be used to market the programme to campus staff, potential partners, and possible funders (Langford, 2006). According to the Workgroup for Community Health and Development (n.d.), an implementation plan should also help answer the following questions:

- i. Are we doing what we said we would do?
- ii. Are we doing it well?
- iii. Is what we are doing advancing the mission of our institution?

2.10 Chapter Summary

This review started with interrogating the concept of health information needs. From the literature, it is clear that the concept is surrounded by limitations and assumptions. There seems to be a dichotomy in defining the term between information practitioners and medical practitioners. The bulk of research on the topic has been carried out by medical practitioners and they have tended to view health information needs from a medical perspective. Their use of the term ‘health needs’ instead of ‘health information needs’ is a clear testimony that their

research solely concentrates on health topics as the basis of determining health information needs.

In light of the deficiencies in defining health information needs, various authors have attempted to come up with a more comprehensive definition. An important point to note in the literature can be drawn from Alzougool, Chang and Gray (2008) who highlight the need to identify recognised and unrecognised information needs for information dissemination efforts. Another dimension in the literature that has been influenced by insights from the field of Information Science amalgamates the aspects of content, process and format into an overall health information need. This study builds upon existing definitions to come up with a comprehensive view of health information which includes the content, skills gaps, and user preferences in terms of the media and channels for dissemination of health information.

Direct evidence from the literature reviewed suggests that universities are making conscious efforts to empower students with health information. A number of dissemination methods have also been used to transfer health information, namely, websites, discussion groups, printouts, wellness courses, workshops, and departmental services, among others. However, it is evident that most universities still rely on traditional counselling services for the dissemination of mainly mental health information. Current health information dissemination methods have come under attack for their lack of integration, and less explicit structures. Moreover, they lack pro-activity and information tends to flow in one direction, from health information providers to the students. The situation in Zimbabwe was summarised by Chibaya (2012) who stated that universities are still ill-equipped to deal with the various health information needs of students.

The World Health Organisation (2005) suggested the need for explicit, integrated and settings-based approaches to health promotion. Therefore, there have been calls for universities to come up with efficient methods of transferring accurate health information to students. Information dissemination principles drawn from the literature recommend that universities come up with proactive integrated and coordinated information dissemination

systems to achieve cost effectiveness. Active user involvement has also been seen as key in developing and implementing successful information dissemination programmes.

The next chapter looks at the theoretical framework of the study. The chapter highlights the theories that inform health, behaviour change and information dissemination.

CHAPTER 3

THEORETICAL FRAMEWORK

3.1 Introduction

There is a causal relationship among the concepts of information dissemination, behaviour change and health. In fact, these concepts are closely intertwined, for example information, through effective dissemination, influences behaviour change, which in turn leads to positive health or wellbeing. Therefore, this chapter highlights the theories that inform health, behaviour change and information dissemination.

The chapter is divided into three broad categories; the first section explores the epistemological and theoretical foundations of health as a concept, with the aim of interrogating the factors that influence health information needs. The Salutogenesis paradigm heavily influenced an understanding of health information needs. The Salutogenesis approach focuses on factors that support human health and well-being, rather than on factors that cause disease.

The second section examines behaviour change theories that are relevant for this study. The framework assumes that health is influenced by behaviour, that behaviour is determined by psychological entities or ‘constructs’ in the brain and also by the environment, and that interventions can hope to affect either, or both, brain and environment, and so affect behaviour. Researchers agree and generally recommend that behaviour change programmes should be designed using theory for them to be more effective (Michie and Abraham, 2004: 46). There is a plethora of behaviour change theories in health promotion literature which are enshrined within the Salutogenesis Theory. This study classified the theories into individual level, community level and process level.

The third section interrogates information dissemination models. The study argues that information dissemination should not be a one-way transaction, but rather a two-way, interactive process. Moreover, the framework highlights theories that inform effective dissemination, at the expense of successful dissemination, the argument being that the goal of dissemination is not to make the information reach its destination but rather to ensure that the information is used for decision making and behaviour change.

The resultant framework is an integrated theoretical framework which amalgamates relevant behaviour change and information dissemination theories. The theories were structured into a coherent and analytical framework, with each theory providing a specific focus for the analytic lens of this study. The reason for an integrated framework is that health, according to the Salutogenesis Theory is a complex phenomenon which is influenced by multiple factors. Therefore, single construct theories are inadequate in addressing factors that influence health.

3.2 The Salutogenetic Interpretation of Health

This study is mainly influenced by the theory of Salutogenesis that was introduced in Chapter 2. The model was chosen for this study for several reasons. The main reason is its treatment of health as a concept. Antonovsky (1979) rejects the traditional medical-model dichotomy separating health and illness. He views health as a continuum that focuses on the relationship between health, stress and coping. This view is consistent with the definition of health proposed by the World Health Organisation (WHO): "...health is not only the absence of disease but a state of complete wellbeing in a physical, mental, and social meaning" (United Nations Department of Public Information, 1948). Therefore, this broad view is useful in understanding the diverse health information needs of students.

While most health promotion theories focus on health prevention and general wellbeing, they are narrow in their treatment of health and therefore miss out key causal influences related to health due to their simplicity (Jackson, 2005: 23). The AIDS Reduction model, for example, focuses on a specific disease, overlooking the fact that the disease is influenced by a wide array of psychological and socio-economic factors. Moreover, health is a complex

phenomenon that should not be addressed by focusing on specific diseases but by focusing on an individual's ability to cope with life situations (Antonovsky, 1979).

Antonovsky coined the term Salutogenesis to describe an approach focusing on factors that support human health and well-being, rather than on factors that cause disease. He was intrigued by the question why some people, regardless of major stressful situations and severe hardships, stay healthy while others do not. He observed that some people achieve health despite their exposure to potentially disabling stress factors. He then concluded that achieving wellness is determined by two basic factors, that is, "Generalised Resistance Resources" (GRRs) and a "Sense of Coherence" (SOC) (Antonovsky, 1979, 1987).

Typical GRRs are money, knowledge, experience, self-esteem, healthy behaviour, commitment, social support, cultural capital, intelligence, traditions and view of life (Antonovsky, 1979, 1987). If a person has these kinds of resources at her disposal or in her immediate surroundings there is a better chance for her to deal with the challenges of life. They help the person to construct coherent life experiences. What is more important than the resources themselves is the ability to use them. This view is consistent with student life experiences where they need to manage their meagre resources and acquire knowledge and self-confidence so as to confront challenges brought by college life and ultimately lead a healthy lifestyle.

The SOC is the capability to perceive that one can manage in any situation independent of whatever is happening in life. It is a theoretical formulation that provides a central explanation for the role of stress in human functioning. Beyond the specific stress factors that one might encounter in life, and beyond one's perception and response to those events, what determines whether stress will cause harm is whether or not the stress violates someone's sense of coherence. In other words, the way we view the world affects our ability to manage tension and stress and the outcome (health) is not a matter of chance (Antonovsky, 1987). In his formulation, the sense of coherence has three components:

- i. **Comprehensibility:** a belief that things happen in an orderly and predictable fashion and a sense that you can understand events in your life and reasonably predict what will happen in the future;
- ii. **Manageability:** a belief that you have the skills or ability, the support, the help, or the resources necessary to take care of things, and that things are manageable and within your control; and
- iii. **Meaningfulness:** a belief that things in life are interesting and a source of satisfaction, that things are really worth it and that there is good reason or purpose to care about what happens.

According to Antonovsky (1987), the third element is the most important. If a person believes there is no reason to persist and survive and confront challenges, if she has no sense of meaning, then she will have no motivation to comprehend and manage events. This concept influences this study by focusing on the dissemination of information that improves students' perception of life and their ability to successfully manage the infinite number of complex stressors that they encounter in university life. The salutogenic model influences can be linked to information dissemination principles in a variety of ways.

3.2.1 Linking Salutogenesis with Information Dissemination Principles

At the core of Salutogenesis is the argument for disease prevention. The theory criticizes the pathogenesis approach to health promotion which focuses on specific diseases in terms of their causes and treatment. The Salutogenesis model emphasizes the need for health promoters to devise ways of preventing diseases and the need to empower individuals with requisite skills so that they can lead quality life.

Antonovsky used the river as a metaphor of health development. He stressed that, it is not enough to promote health by avoiding stress or by building bridges to keep people from falling into the river, through curative care. Instead people have to learn to swim (Antonovsky, 1987). He emphasizes the development of life skills such as decision making and health information literacy that would enable students to critically assess their

environment and apply correct decisions in situations that are detrimental to their life. The analogy of health as a river and the factors that affect health is depicted on Figure 3.1.

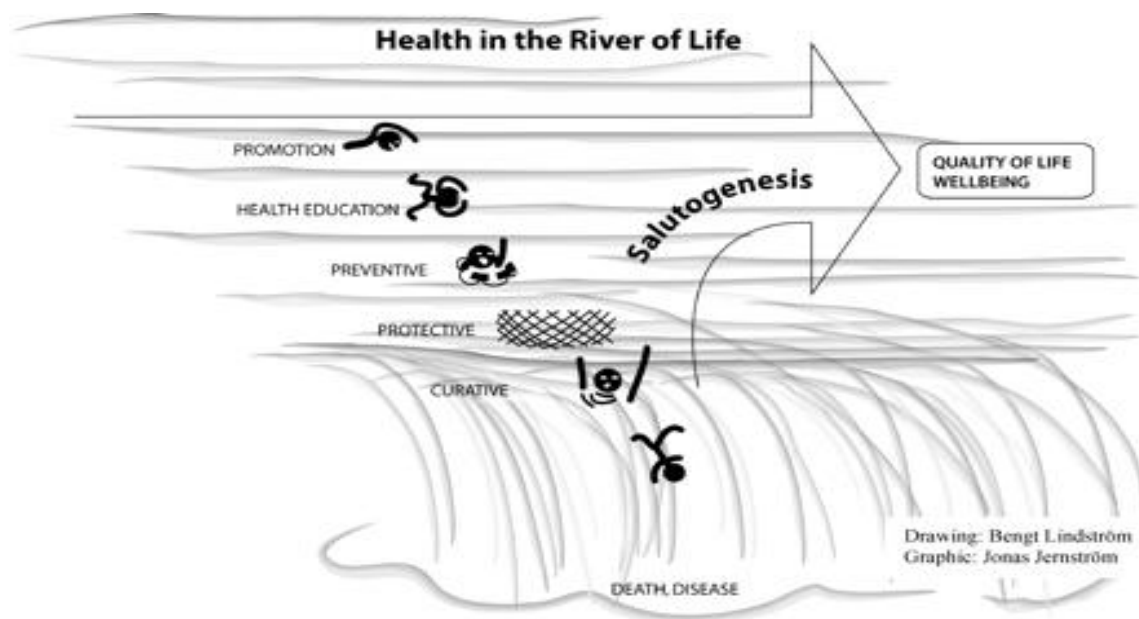


Figure 3.1: Health in the River of Life. (Source: Eriksson and Lindström, 2007).

The above analogy is consistent with an information dissemination principle proposed by the Jed Foundation and Education Development Centre (2011: 3) that health information dissemination programmes should be prevention-focused in addition to being response-focused. This argument is further consolidated by the National Centre for the Dissemination of Disability Research (2001: 17) which advocates for skills development to empower individuals in dealing with life situations.

The model proposes that health promotion action extends far beyond the health sector and health behaviour to wellbeing and Quality of life (QoL). The humanistic approach is emphasized whereby the individual becomes an active and participating subject. The task for the professionals is to support and provide options, enabling people to make sound choices, to point out the key determinants of health, to make people aware of them and to be able to use them (Lindström and Eriksson, 2006: 238).

The issue of active user participation is supported by Westbrook and Lumbley (1990) and Harmsworth, Turpin and TQEF National Co-ordination Team (2000) who argue that information dissemination programmes should be oriented toward the needs of the user and that the most successful dissemination strategies will be those that actively engage users and deliver what the users both want and need. This information dissemination framework involved students in developing the framework by looking at their health information needs and perceptions regarding information dissemination strategies.

The model stipulates that society should create environments and societies characterized by clear structures and empowering environments. This allows people to see themselves as active participating subjects who are able to identify their internal and external resources, use and reuse them to realize aspirations, to satisfy needs, to perceive meaningfulness and to cope with the environment (Eriksson and Lindström, 2007: 939). Dooris (2001: 6) supports the view that there should be clear integrated information dissemination systems within universities that allow for coordinated effort. This study aims at redressing the current situation in Zimbabwean universities which is characterized by less explicit health promotion departments and poor coordination among health promotion efforts.

The Salutogenesis Theory was adopted for this study because of its ability to treat the concept of health from a broad perspective. This study observes that most health promotion efforts in universities tend to be piecemeal approaches, and research has proved that they are not cost effective (Svanstrom, 1999; Hoffman and Jackson, 2003; Garrard et al., 2004; Jackson et al., 2006). Health interventions need to be integrated because factors that cause diseases are interrelated. Health information needs, therefore, need to be looked at from a broad perspective because university students face a wide array of health challenges. This makes the theory useful because it integrates aspects such as skills and resources into health information needs.

3.3 Individual-level Behaviour Change Theories

To be able to change people's behaviour on a large scale is the main concern for health promoters (Aunger and Curtis, 2007: 6). There are several individual-level or cognitive theories that inform health promotion. This study identified the Health Belief Model; Social Cognitive (or Learning) Theory; Theory of Reasoned Action; Stages of Change Model; and, the AIDS Risk Reduction Model. Each of these approaches has strengths and weaknesses but, as yet, there is no clear evidence as to which provides the best guide to changing behaviour (Aunger and Curtis, 2007: 2).

3.3.1 Health Belief Model

The Health Belief Model (HBM) (Hochbaum, 1958; Rosenstock, 1966; Sharma and Romas, 2012) is a psychological model that attempts to explain and predict health behaviours by focusing on the attitudes and beliefs of individuals (Denison, 1996). The theory posits that individual beliefs, supplemented by additional stimuli referred to as 'cues to action' trigger actual adoption of behaviour.

This model may be applied when developing content for information-based health interventions. The model suggests that interventions should emphasize personal susceptibility and the seriousness of not making a change and should outline the costs of unhealthy behaviours and the benefits of change. Information can also act as a cue or catalyst to those who are already contemplating change through advertising campaigns that direct people to information services which provide information on how to be healthier (Robertson, 2008: 4).

This model was useful in informing the study. Since the model focuses on individuals it helped the researcher in interrogating the attitudes of both students and staff members on certain health matters. It also informed the design of the proposed framework, for example on the content of the information dissemination programmes. This model was therefore an appropriate for this needs-based study.

3.3.2 Social Cognitive Theory

The Social Cognitive Theory (Bandura, 1986; Perry, Barnowski and Parcel, 1990) proposes that people are driven by external factors and not by inner forces. This differentiates it from the Health Belief Model which stresses that behaviour change is influenced by attitudes and beliefs of individuals. The Social Cognitive Theory proposes that human functioning can be explained by a triadic interaction of behavior, personal and environmental factors. Bandura, Perry, Barnowski and Parcel coined the term ‘reciprocal determinism’, to explain the relationship amongst these factors. The theory posits that environmental factors represent situational influences and environment in which behaviour is preformed while personal factors include instincts, drives, traits, and other individual motivational forces (World Bank, nd).

The theory was therefore useful in the evaluation of ‘environmental factors’ that influence the success of health intervention strategies at NUST. This theory also proved useful for developing the proposed health information dissemination framework. The theory proposed the need for health promoters to shape the environment to encourage behaviour change; therefore these recommendations were incorporated in the information dissemination framework

3.3.3 The Theory of Planned Behaviour and Theory of Reasoned Action

The Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) evolved from the Theory of Planned Behaviour (TPB) (Ajzen and Madden, 1986; Ajzen, 1991). The TRA is based on the premise that humans are rational and that the behaviours being explored are under volitional control; the theory provides a construct that links individual beliefs, attitudes, intentions, and behaviour. This makes the theory somewhat close to the Health Belief Model. However, their point of departure is on the issue of rationality and the volitional control of an individual. While the Health Belief Model proposes that human behaviour can be influenced by mere messages, the Theory of Reasoned Action goes beyond and suggests the issue of rational thinking.

This theory is useful for predicting individual behaviour. The theory posits that both attitude and norms influence one's intention to perform a behavior. It also recognizes that norms and behaviours vary from population to population. Therefore, it can be applied for designing proactive and targeted information dissemination services within universities such as awareness services and selective dissemination of information.

3.3.4 Stages of Change Model

The Stages of Change Theory (Prochaska and DiClemente, 1983) suggests that behaviour change is a staged process. The model proposes change as a process of six stages, which are (i) pre-contemplation, (ii) contemplation, (iii) preparation, (iv) action, (v) maintenance, and (vi) termination. Individuals may enter or exit the process at any stage and it may also be cyclical, with lapses to previous behaviours.

This theory suggests that information should be tailored to the stage at which the audience is in the change process. For example, a campaign that directs viewers to a smoking quit line may be most helpful to those in the contemplation stage (Dervin et al., 2005), but not to those at the pre-contemplation stage. For someone who has already given up smoking, information on fighting cravings might be more effective, as they are in the maintenance stage (Robertson, 2008: 5).

This theory was pivotal in determining the implementation of health intervention strategies. One of the key areas of this study was to look at how information dissemination interventions should be implemented. The theory therefore guided the researcher in gathering data on implementation strategies for health promotion interventions from the members of staff and the students.

3.3.5 AIDS Risk Reduction Model

The AIDS Risk Reduction Model (ARRM) (Catania, Kegeles and Coates, 1990) provides a framework for explaining and predicting the behavior change efforts of individuals

specifically in relationship to the sexual transmission of HIV and AIDS. The ARRM model incorporates several variables from other behavior change theories, including the Health Belief Model, “efficacy” theory, emotional influences, and interpersonal processes (Denison, 1996).

The authors of the model identified other internal and external factors that may motivate individual movement across stages. Internal factors such as high levels of stress, alcohol and drug use, for instance, may facilitate or hinder the labelling of one's behaviours. External motivators, such as public education campaigns, an image of a person dying from AIDS, or informal support groups may also cause people to examine and potentially change their sexual activities (Denison, 1996: 6).

3.3.6 Criticism of Individual-level Behaviour Change Theories

Although studies have proven the usefulness of these theories, it has become increasingly evident that single construct approaches tend to miss out key causal influences related to health due to their simplicity (Jackson, 2005: 23). For example, the HBM has been attacked on the basis that it does not include social or economic or unconscious (e.g. habitual) determinants of behaviour, which are generally considered to be at least as important as the personal cognitive factors covered by the model (Jackson, 2005:133). The limitations of the TRA include its individualistic approach, and inability to consider the role of environmental and structural issues (Kippax and Crawford, 1993).

Individual-level theories do not entirely explain why some people behave the way they do; why some populations have higher HIV prevalence than others; nor the complex interactions between contextual factors and individual behaviour. Moreover, focus only on the individual psychological process ignores the interactive relationship of behaviour in its social, cultural, and economic dimension thereby missing the possibility to fully understand crucial determinants of behaviour. In the light of these weaknesses, Morris et al. (2012:15), *inter alia*, advocate for integrated theoretical frameworks in informing research and intervention design.

3.4 Community-level Theories

Health is a complex phenomenon that is influenced by multiple factors. Therefore, individual behaviour change theories that focus on the cognitive level may have overlooked important determinants of health. For example, societal norms, religious criteria, and gender-power relations infuse meaning into behaviour, enabling positive or negative changes. Therefore there is need for social models that aim at behaviour change at the community level. Social theories and models see individual behaviours embedded in their social and cultural context. Hence this study identifies the Diffusion of Innovation Theory, the Empowerment Theory and the Social Ecological Models.

Advocates of community-level interventions typically believe that if community members participate in each phase of a behaviour change programme (including development, implementation and evaluation), a sense of ownership is created, which increases the programme's effectiveness, presumably because the people affected by a programme are in a better position to define and find solutions to their own problems (Chambers, 1983; Fals-Borda and Rahman, 1991).

3.4.1 Diffusion of Innovation Theory

Diffusion of Innovation (DoI) (Ryan and Gross 1943; Rogers, 2003; Greenhalgh et al., 2004) theory places its emphasis on innovation as an agent of behaviour change, with innovation defined as an idea, practice, or object perceived as new (Rogers, 2003: 12). This makes the theory different from other theories that focus on the agent, or the individual. Diffusion is the process through which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 2003). DoI theory posits four 'main elements' of behaviour change: innovation, communication channels, time and social systems (Rogers, 2003: 11-38).

According to Dearing (2008: 100) diffusion occurs through a combination of (i) the need for individuals to reduce personal uncertainty when presented with new information, (ii) the need

for individuals to respond to their perceptions of what others are thinking and doing, and (iii) general felt social pressure to do as others have done.

Diffusion approaches in public health programmes focus on the tailoring of messages according to each individual's stage in the individual innovation-decision process (individual's degree of readiness or stage of change (Dearing, 2008: 100). According to the DoI theory, behaviour will change more rapidly if innovations are perceived as being better than previous options (relative advantage) and consistent with the existing values, experiences and needs of potential adopters (compatibility), if they are easy to understand (complexity), testable via limited trials (trialability) and their results are visible (observability). The theory also posits that people are most likely to adopt new behaviours based on favourable evaluations of the idea communicated to them by other members whom they respect (Morris et al., 2012: 14).

This theory particularly highlights the different roles of communication channels in creating awareness amongst potential adopters. It is argued that innovations are evaluated "through the subjective valuations of near peers" rather than via experts or scientific analyses (Rogers, 2003: 36), thus close interpersonal communications play a key role in the transmission of health messages. The theory posits that social systems or 'diffusion networks', are critical in the diffusion process.

Social networks and information dissemination come together around the concept of homophily. Morris et al. (2012) defined homophily as the degree to which interacting individuals are similar in their attributes, for example, education, social status, and values. Generally, dissemination is most likely and effective within homophilous social networks where members share common understandings, language and meanings (Morris et al., 2012: 14). This makes the theory useful in designing health interventions for populations with homogeneous characteristics such as the student population.

3.4.2 The Empowerment Model

Emphasis of the Empowerment Model is on an 'orientation' toward the empowerment of communities, rather than a particular method of interaction with them (Ross, 1955; Minkler and Wallerstein, 2002). The theory asserts that social change happens through dialogue to build up a critical perception of the social, cultural, political and economic forces that structure reality and by taking action against forces that are oppressive (Parker, 1996). In other words, empowerment should increase problem solving in a participatory fashion, and should enable participants to understand the personal, social, economic and political forces in their lives in order to take action to improve their situations (Israel et al., 1994).

Interventions using empowerment approaches are expected to consider key concepts such as beliefs and practices that are linked to interpersonal, organisational and community change. Intervention activities can address issues at the community and organisational level such as central needs of the community. The theory agrees with the Diffusion of Innovation theory on the need to empower participants. This makes it relevant for the development of needs-based interventions.

3.4.3 The Social Ecological Model

According to this model, patterned behaviour is the outcome of interest and behaviour and is viewed as being determined by (i) intra-personal factors - characteristics of the individual such as knowledge, attitudes, behaviour, self-concept, skills; and (ii) interpersonal processes and primary groups, formal and informal social network and social support systems, including the family, work group and friendships; (iii) institutional factors - social institutions with organisational characteristics and formal and informal rules and regulations for operation; (vi) community factors - relationships among organisations, institutions and informal networks within defined boundaries; (vii) public policy - local, state and national laws and policies (McLeroy et al., 1988).

In the health promotion context, this model asserts that health- and safety-related behaviours are shaped not only by the individual but also by that individual's environment. On a campus,

for example, this would mean that efforts focused on increasing available health services need to be supplemented by programmes and policies to bring about changes in the campus culture and environment (The Jed Foundation and Education Development Centre, 2011: 8)

3.5 Process Approaches

Process Approaches are theories or models concerned with specifying how the design and implementation of population-level interventions should take place. They are explicitly concerned with implementation, which is only implicit in many other classes of approach (Aunger and Curtis, 2007: 28-29). They can be considered attempts to conceptualize ‘best practice’ approaches for those seeking to change the behaviour of others. This study largely employed the process approach in the design of the information dissemination framework.

3.5.1 Social Marketing Theory

One good example of the process approaches that is applicable for this study is the Social Marketing Theory (Kotler, Roberto and Lee, 2002). The Social Marketing Theory proposes six steps in the development of information based intervention strategies: (i) Analysis, (ii) Planning, (iii) Develop campaign messages and activities, (iv) Implement and monitor the plan, (v) Evaluate the results, and (vi) Feedback or refinement (Kotler, Roberto and Lee, 2002).

Social marketing campaigns have the potential to increase public knowledge on a given topic and they provide specific directions for behavioural change (Randolph and Viswanath, 2004). They are therefore especially useful on the college campus where students physically travel within campus communities from building to building where they live, take classes, study, socialize, and eat. These education campaigns can be instructive for the many college students who for the first time are living away from their families and developing new friendships and social networks (Reingle et al., 2009). Students are responding to new circumstances and living situations with varying amounts of skills in social negotiation therefore seeing positive messages about “expected” behavior may help students navigate their new surroundings (Maggs and Schulenberg, 2004).

University administrators can use social marketing techniques to address a myriad of individual and community health issues such as increased fruit intake (Shive and Neyman, 2006), and alcohol misuse (Turner, Perkins and Bauerle, 2008). Social marketing campaigns have been used to raise awareness of sexual violence in the campus community. The “Stimulate Conversation Campaign” encourages college students to communicate before engaging in sexual relationships (Colorado Coalition Against Sexual Violence, 2002); the “Red Flag Campaign” asks students to intervene if they witness something troubling (Potter and Perry, 2008). Banyard, Plante and Moynihan (2004) assert that social marketing campaigns can make an important contribution in shaping individual behaviour.

The social marketing theory had a significant impact on the study. From the literature that was reviewed above, it is clear that this theory has led to the success of a number of health intervention programmes (Shive and Neyman, 2006; Turner, Perkins and Bauerle, 2008). Therefore, the constructs of the theory, that is, participation by members of the community, active user involvement, and interactivity were studied and the findings corroborated the importance of these aspects. Therefore the theory was useful in developing the health information dissemination framework.

3.6 Models of Information Dissemination

The concept of information dissemination has been surrounded by a lot of limitations in the field of Library and Information Science. Traditionally, information dissemination has been treated as a one way transaction, whereby information was transferred to a passive recipient through information dissemination channels. Dissemination was perceived as a linear, mechanical process of “transfer”, in which knowledge is packaged and moved from one “place” to another, much as an appliance might be packaged and shipped (National Centre for the Dissemination of Disability Research, 1996).

Klein and Gwaltney (1991: 246-247) identified four or types of dissemination:

- i. **Spread:** a one-way diffusion or distribution of information;
- ii. **Choice:** a process that actively helps users to seek and acquire alternative sources of information and learn about their options;
- iii. **Exchange:** which involves interactions between people and the multidirectional flow of information; and
- iv. **Implementation:** which includes technical assistance, training, or interpersonal activities designed to increase the use of information or to change attitudes or behavior of individuals.

This study proposes that information dissemination is a two-way process which involves effective and efficient interactions between the information provider and the receiver. This notion is supported by the National Centre for the Dissemination of Disability Research (2001) Monahan and Scheirer (1988) also likened a dissemination system to a bridge which enables two-way communication between health promoters and the recipients of health promotion efforts. This approach nevertheless embodies the belief that knowledge comes in definable, useable units that can be arrayed in front of users who will then find among them something to solve their problems.

Newman and Vash (1994: 381) note that, “Experience shows that possession of information does not mean it will be used”. Similarly, Sechrest, Backer, and Rogers (1994: 187) argue that “...we need to distinguish between 'dissemination' and 'effective dissemination,' because the former term is often used to indicate merely the successful distribution of information”. In light of these arguments this study does not only treat dissemination as a two-way process, but also looks at theories that inform effective dissemination. In the literature, there are three dominant models that ensure effective dissemination of information. The Diffusion Model, Information-Seeking Model, and the Elaboration Likelihood Model (ELM). Paisley (1993: 227), contrasts two models that he labels as the Diffusion Model, which emphasizes the disseminator of information, and the Information-Seeking Model, which emphasizes the roles of users in seeking solutions.

3.6.1 Diffusion Model

Diffusion is the process through which an innovation is communicated through certain channels over time among the members of a social system. Key components of the Diffusion Theory according to Dearing (2008: 100) are:

- i. Innovation: an idea, practice, or object perceived as new;
- ii. Adopter: an individual or organisation capable of adopting an innovation;
- iii. Social system: in terms of the structure of the system, its local informal opinion leaders, and potential adopter perception of social pressure to adopt;
- iv. Individual adoption process: a stage-ordered model of awareness, persuasion, decision, implementation, and continuation; and
- v. Diffusion system, especially an external change agency and its paid change agents who, if well trained, correctly seek out and intervene with the client system's opinion leaders, paraprofessional aides, and innovation champions.

This theory posits that a new idea or information is generated and is communicated through certain channels over time among the community members. In other words, information practitioners have a duty to collect and distribute new information products which would be shared over time with the user community. The theory assumes that uncertainty leads an individual to a search for information which is perceived to be important in terms of having consequences for a potential user. This notion however, while true to a certain extent, overlooks the fact that individuals may not be consciously aware of a need for information (Alzougool, Chang and Gray, 2008). Moreover, the model overlooks the importance of the user in terms of her preferences, and information seeking skills. The Information-Seeking Model helps in addressing this gap.

3.6.2 Information-seeking Model

This model suggests that information-seeking behaviour arises as a consequence of a need perceived by an information user, who, in order to satisfy that need, makes demands upon formal or informal information sources or services, which result in success or failure to find relevant information. If successful, the individual then makes use of the information found

and may either fully or partially satisfy the perceived need - or, indeed, fail to satisfy the need and have to reiterate the search process (Wilson, 1999).

There are various Information-Seeking Models which are complementary, rather than competing. These include Wilson's (1981) model of information-seeking behaviour; Dervin's (1983) sense-making theory; Ellis's (1989) and Ellis, Cox and Hall (1993) behavioural model of information seeking strategies; Kuhlthau's (1991) model of the stages of information-seeking behaviour; and Wilson and Walsh's (1996) model.

3.6.3 The Elaboration Likelihood Model (ELM)

The Elaboration Likelihood Model (ELM) hypothesizes that persuasion depends on the level of scrutiny given to a message. The theory places importance on the nature of the message and its origin. It argued that individuals are motivated to change their behavior if the message triggers their 'peripheral processing' (Petty and Cacioppo, 1986). Robertson (2008: 7) states that "A campaign fronted by a celebrity may provoke interest and, through peripheral processing, lead the viewer to understand the message... to change habitual behaviours and bring about long-lasting change". Conversely, if an argument is not convincing enough, individuals use peripheral cues that lead to 'less stable' attitude changes, which are less likely to lead to behaviour change (Crano and Prislin, 2006).

For a message to travel successfully from source to receiver and reach its desired destination, McGuire (1989), outlines eleven 'output' stages that need to occur:

- i. Exposure to the message;
- ii. Attending to (notice of the message);
- iii. Liking and becoming interested in it;
- iv. Comprehending it;
- v. Skill acquisition (learning how to respond to it);
- vi. Yield to the message (attitude change);
- vii. Memory storage of content and/or agreement;
- viii. Information search and retrieval (be able to recollect the message);
- ix. Deciding on the basis of retrieval;

- x. Behaving in accord with decision; and
- xi. Reinforcement of desired acts.

3.6.4 Criticisms of the Models

The major limitation of these models lies in the fact that they tend to focus on one element of the information dissemination process. The Diffusion Model focuses on the originator of information, the Information-Seeking Model focuses on the users of information, whilst the Elaboration Likelihood Model focuses on the message being transmitted. Moreover, the theories are based on the premise that users have conscious needs and therefore actively seek information to solve a specific problem. This notion is a limited view of information needs because users may not be conscious of their information needs. Moreover, they may choose not to demand for information, depending of various circumstances such as lack of confidence in the information (Eisenberg, Golberstein and Gollust, 2007); lack of time (Kicklighter et al., 2010); and confidentiality of the information involved (National Alliance on Mental Illness, 2012).

This study addresses this problem by taking a holistic approach on information dissemination. This approach takes into account the salient factors that determine effective dissemination of information (see Table 3.1). The model also borrows insights from the Salutogenetic theory of health, information dissemination models and behaviour change theories.

3.6.5 Integrated Information Dissemination Model

This study borrows insight from individual behaviour change theories and health information dissemination theories to come up with an integrated model for information dissemination. The model was influenced by the National Centre for the Dissemination of Disability Research (1996), which proposes five major elements for effective dissemination:

- i. **Source:** that is, the agency, organisation, or individual responsible for creating the new knowledge or product, and/or for conducting dissemination activities;
- ii. **Content:** that is, the new knowledge or product itself, as well as any supporting information or materials;

- iii. **Medium:** that is, the ways in which the knowledge or product is described, “packaged,” and transmitted;
- iv. **User:** or intended user, (relevance of the information or product to be disseminated, user skills); and
- v. **Destination:** that is, the desired outcome of the message (an attitude change or a new behaviour).

Table 3.1 Elements and Issues Related to the Information Dissemination Process

Elements of Dissemination	Issues in Effective Dissemination
Source	Perceived competence Credibility of experience Credibility of motive Sensitivity to user concerns Relationship to other sources trusted by users Orientation toward dissemination and knowledge use
Content	Credibility of research and development methodology Credibility of outcomes Comprehensiveness of outcomes Utility and relevance for users Capacity to be described in terms understandable to users Cost effectiveness Research design and procedures Relationship between outcomes and existing knowledge Competing knowledge or products
Medium	Physical capacity to reach intended users Timelines of access Accessibility and ease of use, user friendliness Flexibility Reliability Credibility Cost effectiveness Clarity and attractiveness of the information "package"
User	Perceived relevance to own needs User's readiness to change Information sources trusted Format and level of information needed Level of contextual information needed Dissemination media preferred Capacity to use information or product (resources, skills, and support)
Destination:	desired outcome

Adapted from the National Centre for the Dissemination of Disability Research (1996)

This framework reveals the complex nature of the process of effective information dissemination. It highlights the fact that when someone is developing an information dissemination strategy, she needs to consider the journey of a message from source to destination, and each input is important. A well-designed message will have no impact, for example, if transmitted via the wrong channel (Robertson, 2008: 6). A message will not be effective if the user does not have information literacy skills to access it. Moreover, there is need to understand what inspires behaviour change. Therefore, the information dissemination framework developed from this study considers the key elements of the integrated information dissemination model summarized in Table 3.1. The integrated theoretical framework summarizing the major theoretical dimensions is depicted in Figure 3.2 below.

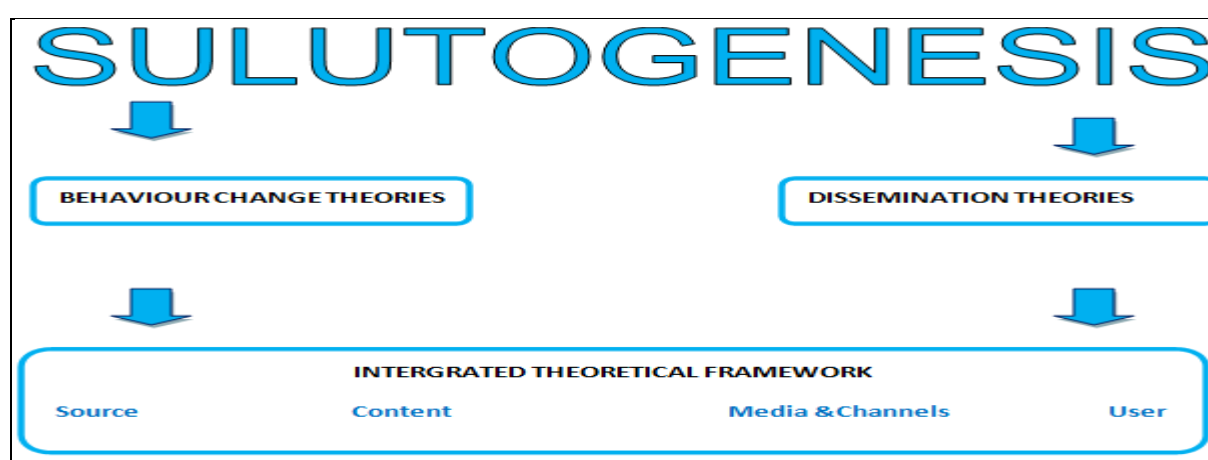


Figure 3.2: Integrated Theoretical Framework

3.7 Chapter Summary

The complexity of health, and behaviour change and information dissemination described in the literature referred to in this chapter has led to an attempt to distil ‘core’ elements down into an integrated theoretical framework. This study argues that health intervention strategies should be integrated for them to be cost effective (Nyamwaya, 1997; Svanstrom, 1999; Hoffman and Jackson, 2003; Garrard et al., 2004; Jackson et al., 2006). This argument is premised on the fact that health is a complex phenomenon which is influenced by several factors (Nyamwaya, 1997).

It is important to note that the three concepts of health, information dissemination and behaviour change are closely intertwined. As stated at the outset of this chapter, there are causal factors amongst these concepts, for example information (through effective dissemination) influences behaviour change, which in turn leads to positive health (or wellbeing). Therefore the theories that influenced this study can be classified into three broad categories as outlined below:

3.7.1 The Salutogenetic Interpretation of Health

The Salutogenesis Theory is the core of this study; the theory looks at health as a complex phenomenon which is affected by multiple factors. It rejects the traditional pathogenesis approach which focuses on specific diseases by proposing the Salutogenesis approach which looks at wellbeing. The theory was pivotal in understanding the variables that influence health information needs of students, for example on stress management, life skills, and resources, which are often overlooked by other researchers.

3.7.2 Behaviour Change Theories

This study is premised on the fact that health is influenced by behaviour and that behaviour is determined by psychological entities in the brain and also by the environment. Therefore, the framework highlights the relevant behaviour change theories which can be classified into individual-level (Health Belief Model, Social Cognitive Theory, Theory of Reasoned Action, Stages of Change Theory, and AIDS Reduction Model); community-level (Diffusion of Innovation Theory, Empowerment Model, and Social Ecological Model); and process-based (Social Marketing Theory).

These theories largely complement each other. The theories are helpful in determining the strategies that can be used by information practitioners to influence behaviour change, for example, the Health Belief Model proposes that the messages that instil fear in individuals trigger behaviour change, whilst cognitive theories emphasize individual rationality. It is therefore essential to consider an integrated approach because a particular theory may be useful for a particular health problem. The AIDS Reduction Model, for example, has been useful for AIDS related interventions (Catania, Kegeles and Coates, 1994), and the Stages of

Change Theory has proved useful for tobacco cessation programmes (Robertson, 2008: 5). However, these theories have been criticized for their individual nature, their simplicity and failure to address certain health variables, hence the need for integrated theories.

3.7.3 Information Dissemination Models

This study proposes a two-way information dissemination process. Traditionally, information dissemination was viewed as a one way transaction. However, evidence suggests that information providers should closely interact with information recipients, through feedback mechanisms for the dissemination process to be effective (King, Hawe and Wise, 1998; National Centre for the Dissemination of Disability Research, 2001).

Successful information dissemination does not entail effective information dissemination. The former is concerned with the message reaching its destination while the latter is concerned with utilization of information and behavior change. Therefore, the theoretical framework for this study includes theories that facilitate utilization of information, namely, the Diffusion Model the Information-Seeking Model, and the Elaboration Likelihood Model. However, the major limitation of these models is their focus on one dissemination element and their failure to address unrecognized health information needs.

3.7.4 Integrated Information Dissemination Model

Being housed in the Salutogenesis or health prevention philosophy, the study borrowed insights from behaviour change and information dissemination theories to come up with an integrated health information dissemination model. The research also borrowed some insight from the Elaboration Likelihood Model by Petty and Cacioppo (1986), McGuire's (1989) Persuasion Model, and proposals by the National Centre for the Dissemination of Disability Research (1996). The model theorizes that the source, content, medium, user, and destination are key variables that should be addressed for effective information dissemination.

The next chapter outlines the research design that was used for this study. It describes the study's research philosophy and design, including its case study approach, the study population, sampling procedure, data collection methods and tools, quality of research tools, and data processing and analysis procedures. The chapter also addresses the validity and reliability issues of the study, and the procedures in developing the information dissemination framework.

CHAPTER 4

RESEARCH DESIGN AND METHODS

4.1 Introduction

In the previous chapter, the underlying theoretical framework of this study has been presented. This chapter describes the underlying paradigms, methods of the research design, the interpretive practice and the process of data analysis adopted for this study. Ethical consideration pertaining to data collection and which are relevant to this research are also discussed.

4.2 Epistemological and Philosophical Underpinnings of the Research

The study is based on the Constructivist Grounded Theory (Charmaz, 2003, 2006), which combines both the epistemological and ontological perspectives. This position takes a middle ground between the realist and postmodernist positions. Postmodernism is a philosophical and intellectual movement within the domain of knowledge production which claims there can be no ultimate epistemology upon which to base a search for knowledge. It disagrees with the existence of meta-narratives to encompass all explanations of social phenomena. In other words, it challenges the idea of an absolute representation of reality. Realism is a philosophy that assumes that there is an obdurate or absolute reality (Thornberg, 2012).

This study is based on the pragmatic approach which recognises both absolute reality and multiple realities and multiple perspectives on these realities (Thornberg, 2012). Baxter and Jack (2008: 545) highlight an advantage of this paradigm by asserting that it “...recognizes the importance of the subjective human creation of meaning, but does not reject outright some notion of objectivity”.

Constructivists view knowledge and truth as created, not discovered by the mind (Schwandt 2003); they also support the view that being a realist is not inconsistent with being a constructivist. A central tenet of Constructivist Grounded Theory is to give voice to participants. Therefore, Charmaz (2006) has encouraged grounded theorists to incorporate the multiple voices, views and visions of participants in the research process, which is consistent with the development of a needs-based information dissemination framework.

A key principle in Constructivist Grounded Theory is that data and analysis are co-constructed in the interaction between the viewer and the viewed, the researcher and the participant (Charmaz, 2003, 2006). The meaning that students construct depends on their needs, beliefs, and prior knowledge (Jonassen and Land, 2000:1). This makes the approach suitable for this study because it allows students to propose their desired preferences in the design of the health information dissemination framework.

Previously, grounded theorist tended to focus on the ‘objectivist’ stance which proposed that there is obdurate reality. However, Charmaz (2003) has been critical of the ‘objectivist’ stance within classic grounded theory, advocating instead for a mutual relationship between the researcher and participants resulting in the creation of a shared reality. Charmaz (2006: 273) views Constructivist Grounded Theory as a revolt against ‘objectivist’ grounded theory, which seeks to develop a “provisionally true” and “verifiable” theory of reality. Charmaz (2000: 150) states that:

Constructivist Grounded Theory celebrates first-hand knowledge of empirical worlds, takes a middle ground between postmodernism and positivism, and offers accessible methods for taking qualitative research into the 21st century...

The constructivist grounded paradigm is suitable in the design of a needs-based information dissemination framework because it emphasizes active involvement of participants during the design of programmes. It enables the researcher to understand the real and actual interests of participants, and, based on this information, incorporate programmes that have real relevance for each participant (Mattar, 2010: 3). One of the major theorists of constructivism, Von

Glaserfeld (1995: 7-8) consolidates this viewpoint by stating that: “To the biologist, a living organism is viable as long as it manages to survive in its environment. To the constructivist, concepts, models, theories, and so on are viable if they prove adequate in the contexts in which they were created.”

Constructivist Grounded Theory assumes the relativism of multiple social realities (Charmaz, 2003, 2006). However, critics of the Constructivist Grounded Theory such as Hammersley (1992) have questioned the usefulness of the findings generated from studies using this method, given that the multiplicity of accounts produced can each claim legitimacy. If all are legitimate and given the logical conclusion of relativism, then there is no reason to prefer one account to another. That is, the conclusions of research themselves constitute just another account and as such cannot claim to have precedence over any other account (Murphy et al., 1998).

Hammersley and Atkinson (2007) state that, “If it is accepted that researchers themselves construct a social world rather than merely representing some independent reality, then this is the source of tension between realism and relativism”. Realism and relativism represent two polarised perspectives on a continuum between objective reality at one end and multiple realities on the other.

Andrews (2012) asserts that both realism and relativism are problematic for qualitative research. Adopting a realist position ignores the way the researcher constructs interpretations of the findings and assumes that what is reported is a true and faithful interpretation of a knowable and independent reality. Relativism leads to the conclusion that nothing can ever be known for definite, that there are multiple realities, none having precedence over the other in terms of claims to represent the truth about social phenomena.

To resolve the seemingly intractable issue of realism versus relativism, this study used a combinist approach which embraces both realism and relativism. Hammersley (1992) supports this pragmatic approach, which is also known as sublrealism. In trying to clear the

confusion that surrounds the concept of knowledge and its generation, Hamilton (2002) offers an alternative definition of knowledge as beliefs in which one can have reasonable confidence in their validity or truth. This is a pragmatic view of knowledge based on how society resolves such matters in everyday life by judging its truth in relation to what is already known, not by appeal to philosophy. In a sense, this is an example of what Burr (2003) refers to as the self-referent system, where concepts can only be defined in terms of other concepts existing in the same language system.

Andrews (2012) claims that the vast majority of studies adopt the mild or contextual form of analysis, where a distinction is maintained between what participants believe or claim about the social world and what is in fact already known. This mild approach was adopted for this study because of its current progression within the health sector (Andrews, 2012). Therefore, existing literature and theory, and prior knowledge and experience of the researcher, were used to inform the development of the information dissemination framework. Literature was used as ‘data’ and constantly compared with the emerging categories that were integrated in the theory (Glaser, 2005).

4.3 Research Design: Mixed Methods in Context

This study is predominantly qualitative; but with quantitative data collection and analysis techniques being used to mitigate the shortcomings of qualitative research. Qualitative research is grounded in a philosophical position which is broadly interpretivist in the sense that it is concerned with how the social world is interpreted, understood, experienced or produced. It is based on methods of data generation which are flexible and sensitive to the social context in which data are produced (Baxter and Jack, 2008).

Muhammad et al. (2011) states that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret phenomena in terms of the meanings people bring to them. The qualitative approach to research is typically used to answer questions about the nature of phenomena with the purpose of describing and understanding

them from the participants' point of view. This makes the approach suitable for developing a needs-based information dissemination framework.

Healthcare involves complex human interactions that can best be studied or explained in complex terms; therefore the scope of health information dissemination can be extended by the use of qualitative methods (Anderson, 2010: 3). However, qualitative research is often criticized as biased, small scale, anecdotal, and or lacking rigor (Anderson and Taylor, 2009). Anderson (2010: 3) states that in qualitative research, there needs to be a way of assessing the "extent to which claims are supported by convincing evidence". In the context of this study, this involved the use of quantitative data collection and manipulation, as explained below.

4.3.1 Validity and Reliability of the Design

The validity of research findings refers to the extent to which the findings are an accurate representation of the phenomena they are intended to represent. The reliability of a study refers to the reproducibility of the findings (Anderson, 2010: 4). The validity of this study was substantiated by using triangulation. Triangulation is a sub set of the mixed method design. Creswell and Plano (2007: 58–88) devised a four-way classification of the main mixed methods designs, namely; triangulation design, embedded design, explanatory design, and exploratory design. This study used triangulation to obtain complementary quantitative and qualitative data.

Triangulation is defined as the combination of two or more methodological approaches, theoretical perspectives, data sources, investigators and analysis methods to study the same phenomenon (Olsen, 2004). It uses multiple methods, mainly qualitative and quantitative methods, in studying the same phenomenon for the purpose of increasing study credibility (Maxwell and Loomis, 2003). Therefore, triangulation was used in this study to increase the study accuracy and validity of the results (Golafshani, 2003). Triangulation is an approach that is common in mixed method research and sometimes the terms are used interchangeably.

The use of mixed methods in studying the same phenomenon continues to be advocated by various scholars (Coyle and Williams, 2000; Mactavish and Schleien, 2000; Creswell, 2002) for the purpose of enlarging and deepening the understanding of the research enquiries. To prove the importance it has received, some researchers claim mixed methods to be a third research method in addition to qualitative and quantitative research methods. Different names have been assigned to this new and growing research position; some of them are multi-methods (Brannen, 1992), mixed methods (Creswell, 2003) mixed methodology (Tashakkori and Teddlie, 2003), or multi-strategy (Bryman, 2004).

There are five types of triangulation: methodological triangulation, investigator triangulation, theoretical triangulation, analysis triangulation and data triangulation (Hussein, 2009: 3). This study used methodological triangulation which involves the use of both qualitative and quantitative data collection methods and analysis in studying the same phenomenon (Thurmond, 2001). The study used focus groups and interviews, which are qualitative in nature. Quantification was achieved through the use of a questionnaire (see Appendix A). The questionnaire allowed the researcher to manipulate data quantitatively and qualitatively. This allowed the researcher to quantify student priorities and to understand the extent to which current information dissemination strategies are meeting the health information needs of students.

The researcher used the ‘within-method triangulation’ which involves the use of multiple methods within a given single paradigm for data collection and analysis. This approach is important for completeness purposes since it allows for recognition of multiple realities (Tobin and Begley, 2004). Using multiple, complementary data gathering and analysis techniques allowed the researcher to reap the benefits of the qualitative and quantitative research paradigms and minimizing the drawbacks of each.

Laws and McLeod (2004: 2) argue that quantitative design tends to control bias and improve the objectivity of research findings. Qualitative method typically produces a wealth of detailed information, thereby increasing understanding of the cases and situations studied but

reducing generalisation. In order to mitigate this problem of lack of generalisation, the researcher used a large sample of 600 from a population of 5259 students to increase the reliability of the results.

4.3.2 The Case Study Strategy

The study is based on a qualitative case study methodology. Shuttleworth (2008) defines a case study as “...an in depth study of a particular situation rather than a sweeping statistical survey. It is a method used to narrow down a very broad field of research into one easily researchable topic”. This approach provides tools for researchers to study complex phenomena within their contexts (Yin, 2003). Baxter and Jack (2008: 544) point out that, “...when the [case study] approach is applied correctly, it becomes a valuable method for health science research to develop theory, evaluate programmes, and develop interventions”.

Neale, Thapa and Boyce (2006: 4) state that the primary advantage of a case study is that it provides much more detailed information than what is available through other methods and also allows one to present data collected from multiple methods such as surveys, interviews, and document review to provide the complete story. This gave the researcher greater flexibility in data gathering, since surveys, focus group discussions and primary and secondary literature were used in the study.

The case study methodology was used in this study to get in-depth information about students at NUST and their health information needs. NUST was chosen as the case to investigate so as to enable the researcher to gain in-depth insight into the health information needs of university students at the institution.

4.3.2.1 Generalisation in Case Study Research

Case studies have been criticised for their lack of generalisation. However, Hodkinson and Hodkinson (2001) consider how case studies can provide more than just idiosyncratic understanding. They prefer not to use the term ‘generalisation’ but consider that cases may

shed light on issues beyond the immediate context in which the research was undertaken. The researchers make three claims on how findings can illuminate other situations:

- i. Theory can be transposed beyond the original study. If case studies generate new thinking then new concepts may be relevant to other settings;
- ii. Findings can ‘ring true’ in other settings. It is up to the reader to decide if the analysis presented is convincing, based on their own knowledge of other similar situations and of contexts to which such knowledge may be transferred; and
- iii. Case studies can provide ‘provisional truths’. If there has been little previous theorising in a field of study then evidence from a case study may provide initial provisional theory. As further research is conducted in the field these early provisional findings may become more accepted or refuted.

The researcher agrees with the stance that was advocated by Hodkinson and Hodkinson (2001) that although the resultant framework developed by this study, cannot be generalised to other settings, the knowledge may be transposed to other populations, particularly state universities in Zimbabwe which tend to have generally homogeneous characteristics in terms of age groups, social and economic status. The findings that were gathered in this study may also provide useful insight on certain issues related to health promotion in other state universities in Zimbabwe. For example, undergraduate students in state universities in Zimbabwe may have similar health information needs.

4.4 Population and Sample Size

The term population is defined by Kurtz and Boone (2001: 221) as, “...the total group of people that the researcher wants to study”. The population for the study is made up of undergraduate students, the Dean of Students, the Nursing Sister and the Student Counsellor at NUST. NUST has a total population of 5259 undergraduate students (Admissions and Student Records Department, NUST personal communication 2014, July 23). The study excluded 1010 postgraduate students and students on industrial attachment. Those on industrial attachment were difficult to access and postgraduate students are not full time students at NUST. The target population for the study therefore was 4249 students.

From the target population of undergraduate students a sample size was calculated automatically using the Survey System Software developed by the Creative Research System (2012) available at: <http://www.surveysystem.com/sscalc.htm>. From a population of 4249 students, with a confidence interval of 95% and sampling error of 0.5, a total sample of 352 was calculated. The researcher verified the accuracy of the online calculator by using the table developed by the Universal Accreditation Board (2003), which recommended the same figure. However, the Universal Accreditation Board (2003) further proposes a sample of 500 to 600 for surveys to cater for non-returns. Therefore, a sample of 600 students was chosen to participate in the study to improve the response rate.

4.5 Sampling Procedures

Sampling is the act, process or technique of selecting a suitable sample of a representative part of a population for the purpose of determining parameters or characteristics of the whole population (Mugo, 2010). Stratified random sampling was used to include students according to their faculties. This was done to ensure that students from all the faculties participate in the study. Samples were drawn from five faculties to ensure representation. This method allowed the researcher to select students from each faculty using simple random sampling.

This probability sampling technique gave each undergraduate student an equal chance to participate in the study. Neuman (2006: 41) asserts that a large sample size and study population alone does not guarantee a representative sample. A large sample without random sampling or with a poor sampling frame is less representative than a smaller one with random sampling and an excellent sampling frame. In stratified sampling, a researcher first divides the population into sub populations (strata) on the basis of supplementary information. After dividing the population into strata, the researcher draws a random sample from each subpopulation (Neuman, 2006: 31).

The researcher adopted the proportionate allocation technique to draw samples from each stratum. This method uses a sampling fraction that is proportional to the total population to

ensure that each stratum contributes an evenly significant percentage towards the total sample (National Statistical Service, nd). The formula for the sampling fraction that was used is:

$$f = \frac{n}{N}$$

In this formula n is the sample size, N is the population size and f is the sampling fraction Table 4.1 depicts the sampling frame for the study.

Table 4.1: Sampling Frame

Faculty	Total Undergraduate Population	Sample size	Percentage contribution to the sample size
Faculty of Applied Sciences	975	138	22.9%
Faculty of the Built Environment	197	30	4.6%
Faculty of Commerce	1890	264	44.4%
Faculty of Communication and Information Science	398	54	9.3%
Faculty of Industrial Technology	789	114	18.5%
Total	4249	600	100

The researcher proposes the use of the random sampling method to select participants within each faculty. The researcher calculated the sampling interval using the following formula:

$$k = \frac{N}{n}$$

In this formula n is the sample size, N is the population size and k is the sampling interval. For each faculty the sampling interval was 8. In the Faculty of Applied Sciences, for example, a population of 975 students was divided by a sample of 138, to come up with a sampling interval of 7.065, which was then rounded to 7. After the sampling interval was determined a starting number was generated at random and every seventh student was sampled thereafter.

The researcher also gathered data from the Student Affairs Department, which is a department concerned with health promotion at NUST. Purposive sampling was used for the three staff members which includes the Dean of Students, the Nursing Sister, and the Student Counsellor. By using purposive sampling, also known as judgemental sampling, the researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience (Bernard, 2002; Lewis and Sheppard, 2006). The advantage of purposive sampling is that the researcher can identify participants who are likely to provide data that are detailed and relevant to the research question (Olive, 2012). The three participants assisted in highlighting the existing health promotion strategies at NUST, which provided a basis for developing the information dissemination framework.

4.6 Research Instruments

Research instruments are tools used for collecting research data or information needed to find solutions to the issues under investigation (Kothari, 2011). Data was collected through self-administered questionnaires, interviews See Appendix, focus group discussions and from primary and secondary sources. Triangulation of data collection tools was used in an effort to increase the reliability and validity of measuring instruments.

4.6.1 Questionnaire

According to Saunders, Lewis and Thornhill (2007), a questionnaire is a list of carefully structured questions chosen for considerable testing or measurement of issues under investigation. The preferred use of questionnaires (See Appendix A) as the main research

instrument was based on the inherent advantages that the instrument has over other instruments in terms of time, cost, coverage and reliability (Saunders, Lewis and Thornhill, 2007: 131). Questionnaires are also simple, easy to administer and allow for easy collection as well as analysis of large volumes of data. Further, the instrument encourages respondents to give accurate and confidential information making it suitable for gathering health information needs.

However, use of questionnaires has a number of disadvantages including that some questions may be left unanswered, others may be misinterpreted and some questionnaires may not be returned. It is often difficult to ascertain the authenticity of the intended respondent even as much as it is difficult to establish, verify and ensure the reliability of given responses. These inherent limitations of questionnaires were mitigated by taking pre- and post control measures such as pretesting to ensure that all questions were concise, clear, unambiguous to avoid misinterpretation, using a combination of closed and open-ended questions, assuring respondents of confidentiality and anonymity of their responses, use of secondary and other information sources to validate questionnaire responses, avoiding using double-barrelled questions and including scaled questions for sensitive topics. The researcher worked closely with class representatives to make follow-ups to ensure maximum return of the questionnaires.

4.6.2 Key Informant Interviews

Interviews are a form of a vocally administered survey whose effectiveness is seen in their ability to study exceptional populations and gaining exhaustive information (Creswell, 2013). The interview method (see appendices C, D and E) was used to gather data from purposefully identified key informants, namely the Dean of Students, the Nursing Sister and the Student Counsellor of NUST. This allowed the researcher to gain more insight on the status quo regarding health promotion within the university.

Interviews had several merits for this study. More information was obtained in greater depth and the interviewer overcame some apparent resistance to answer sensitive questions as there

was an opportunity to restructure questions to minimize misinterpretation. Moreover, there was a 100% response since all stakeholders agreed to be interviewed. The researcher also obtained clues from respondent non-verbal communication on what the respondent felt, feared, expected and thought, that actually helped in contextual interpretation of meanings and events as well as in detecting falsehoods and insincerity (Burgoon, Berger and Waldron, 2000: 112).

Limitations of interviews, however, included the need for quality time and a controlled environment. The problem concerning the coding and scoring of open-ended questions was mitigated by using pre-coded interview schedules. Time management therefore was also of critical importance for this study and the researcher strictly adhered to the proposed timeline.

4.6.3 Focus Group Discussions

Berger and Luckmann (1991) state that, "...conversation is the most important means of maintaining, modifying and reconstructing subjective reality". Subjective reality is comprised of concepts that can be easily shared with others. Therefore, focus group discussions (see Appendix B) were vital for this study. The International Development Research Council (2012: 16) defines a focus group discussion as a group discussion of approximately 6 to 12 persons guided by a facilitator, during which group members talk freely and spontaneously about a certain topic. This study had 10 participants per session. The researcher conducted five focus group discussions, that is, one focus group per faculty. Each focus group discussion took approximately one-and-a-half hours, as proposed by Seymour, (2004). The respondents who participated in focus group discussions were drawn from all the faculties. An effort was made to exclude those who had responded to questionnaires. The researcher made formal requests to students from each faculty through the faculty offices.

Having assumed a qualitative research methodology, whose onto-epistemic basis is phenomenological (Creswell, 2008), it was imperative to employ a research technique which could capture the multiple views of reality of socially situated audiences. Focus groups were ideal since they are good at obtaining rich data in participants' own words and for developing deeper insights. Additionally, people are able to build on one another's responses and come

up with ideas they might not have thought of in a one-on-one interview or questionnaire (Family Health International, 2012). This makes the research tool important for gathering feedback from students on the appropriateness of existing health promotion practices and in getting their input on the proposed information dissemination system. Focus groups are also quick, cheap and relatively easy to assemble.

In focus group discussions there is high cross-pollination of ideas, opinions, views and options. This makes focus group discussions useful in developing the information dissemination framework from a user perspective.

When conducting the discussions, the researcher first of all informed the participants about existing methods for disseminating information that have succeeded elsewhere, and then allowed participants to raise their comments and preferences on the available information dissemination methods. This also provided an opportunity to involve participants in data analysis. For instance, the researcher used questions such as, “Out of the issues we have discussed which ones are most important to you?” Most importantly, in focus groups, participants can act as checks and balances on one another - identifying factual errors or extreme views (Chiparaushe, Mapako and Makarau, 2010).

Focus groups also have disadvantages. The researcher has less control over a group than in a one-on-one interview, and thus time can be lost on issues irrelevant to the topic; the data is difficult to analyse because the talking is in reaction to the comments of other group members; observers or moderators need to be highly trained, and groups are quite variable and can be tough to get together (Marshall and Rossman, 1999). Moreover, the number of members of a focus group is not large enough to be a representative sample of a population; thus, the data obtained from the groups is not necessarily representative of the whole population. Another issue with the focus group setting is the lack of anonymity. With all of the other participants present, there cannot be any guarantee of confidentiality (Rushkoff, 2005). The researcher therefore made efforts to restrict the discussion to issues related to the objectives. Since the sample for focus group discussions was smaller, the researcher did not

use the research tool as the primary method for gathering data. Rather, it was used to supplement the interviews and questionnaire survey.

4.6.4 Primary and Secondary Literature

The study utilized both primary and secondary literature to inform the design of the information dissemination framework. Oso and Onen (2008) define primary sources as “...direct descriptions of an occurrence by an individual who actually experienced or witnessed the incident...”. Primary sources that were consulted include journal articles, reports, dissertations, theses, and conference papers. The University of Lethbridge Library (2012) defines secondary literature as: “Information about primary or original information that has been interpreted, modified, selected, or combined with other sources ... usually not written by the actual participants or witnesses”. Therefore, textbooks were also used to gather data on information dissemination principles, theory formulation and the general issues and procedures relating to the development and implementation of a needs-based information dissemination framework.

4.6.5 Validity and Reliability of Research Instruments

Research tools and instruments were designed to ensure that they actually measure the study variables that they intended to measure. Validity in research is essential in ensuring that the tools accurately measure intended variables as well as eliminate possibilities of measuring extraneous study variables (Kane, 2001: 320). Content and construct validity are key in measuring instrument validity with content validity focusing on ascertaining whether the designed research tool contains enough questions to adequately cover the full purpose of the study.

The researcher ensured content validity by making sure that the research questions are spread across the identified literature review gaps in order to fill the research gap. Also, the questions were aligned to critical issues around research objectives and questions. Construct validity focuses on the construction of questions. The researcher made sure that all questions

were concise, clear and relevant. Closed questions were also employed to allow respondents to respond to asked questions.

Construct and content validity was facilitated through meticulous efforts to pre-test the data gathering tools. The researcher pre-tested the research instruments to determine whether the research instruments were accurately constructed and to determine whether the instruments were actually understood by respondents. Pre-testing also helped the researcher in assessing whether respondents are able and willing to provide the needed information. After pre-testing, necessary adjustments were made to the research instruments.

Attention was also given to ensure that the research sample size was large and representative enough to allow generalisation of findings to the rest of Zimbabwean universities. The target was to ensure the generalisation of research findings to the study population using a universally acceptable threshold of 95% level of data statistical significance.

4.7 Data Collection Procedures

Data was collected by using questionnaires, semi-structured face-to face-interviews and focus group discussions. The researcher employed five research assistants to collect data using questionnaires. One research assistant was allocated to each faculty. Six hundred questionnaires were distributed during the 15 minute tea breaks. In some cases, class representatives played a key role in collecting questionnaires at the end of lectures. This strategy allowed for a high response rate of 426 questionnaires, since there were immediate follow-ups. Appointments were made with the Student Affairs staff members for in-depth interviews. Focus group discussions were carried out during the semester, especially on Fridays which are normally reserved at NUST for researches field visits. The research instruments were administered concurrently. However, for focus group discussions, an effort was made to exclude students who would have responded to the questionnaire.

4.8 Data Presentation and Analysis Procedures

Yin (2003: 109) maintains that data analysis consists of “examining, categorizing, tabulating, testing, or otherwise recombining both quantitative and qualitative evidence to address the initial propositions of a study”. Therefore, after the data collection exercise, data was processed and analysed to answer the research questions. The *Statistical Package for Social Sciences (SPSS)* was used for descriptive data analysis. Data presentation was aided by graphs and charts. The Chi-square tests were used to determine interrelationships between different research variables.

4.8.1 Quantitative and Qualitative Content Analysis

The study employed both quantitative and qualitative content analysis to increase the reliability and validity of the research results. Quantitative methods of data analysis were also of great value to the researcher; the method enabled the researcher to draw meaningful results from a large body of qualitative data. The main beneficial aspect of quantitative content analysis is that it provides the means to separate out the large number of confounding factors that often obscure the main qualitative findings (Patton, 2002).

Quantitative analytical approaches also allow the reporting of summary results in numerical terms to be given with a specified degree of confidence. For example, a statement such as “45% of the student population lack information on reproductive health,” may be enhanced by providing 95% confidence limits for the true proportion reproductive health needs as ranging from 42% to 48%. Here it is possible to say with more than 95% confidence that about half of the student population need access to reproductive health information, since the confidence interval lies entirely below 50% (Patton, 2002).

The researcher used Pearson’s Chi-Square (X^2) test to establish relationships between variables. The Chi-square test is a statistical technique that is used to calculate relationships between categorical frequencies drawn from a population with a uniform distribution (Oso and Onen, 2008: 98). There was a need to determine whether there was a statistically

significant relationship between certain variables, for example, between health information needs and gender.

Qualitative content analysis was therefore useful in analysing health information needs and in quantifying the extent to which current information dissemination methods are meeting the needs of students. This would be difficult achieve through qualitative content analysis only.

Bryman (2004: 392) describes qualitative content analysis as process of searching-out for underlying themes in materials being analysed. Qualitative content analysis has been defined as, “A research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh and Shannon, 2005: 1278).

Qualitative content analysis involves a process designed to condense raw data into categories or themes based on valid inference and interpretation. This process uses inductive reasoning, by which themes and categories emerge from the data through the researcher’s careful examination and constant comparison (Patton, 2002). This approach was appropriate since the study uses the Constructivist Grounded Theory development.

In the context of this study, the data that was gathered from literature, interviews, questionnaires and focus group discussions was thematically coded according to the research questions and the information dissemination theory that was developed in Chapter 3. Thematic coding can be described as a loose inductive process of categorising data extracts with reference to various concepts headings or themes. It consists of comparing, contrasting, and abstracting constitutive elements of meaning.

Coding schemes were developed both inductively and deductively. The data that was gathered on health information need of students, through the questionnaire was deductively

coded and developed into themes that were informed by the information dissemination theory. Coding schemes were also inductively developed from the literature that was systematically and serendipitously gathered.

4.8.2 Procedures in Developing the Framework

The development of the health information dissemination framework was done in three major phases. The first phase involved gathering preliminary data through student needs analysis, resource assessment, and readiness assessment. As has been highlighted earlier, student needs assessment is a key step in developing needs-based programmes. Moreover, an honest assessment of the individual and institutional factors that are likely to facilitate or impede change (through readiness and resource assessments) can help to identify resources and obstacles ahead of time. Edwards et al. (2008) interpose that a readiness assessment can help to identify the types of programmes that are appropriate to initiate, based on the stage of readiness of administrators and stakeholders.

The second phase involved analysis of the data that was gathered through needs assessment and readiness assessment. The data from the needs assessment was analysed to determine the health information needs of students. This data assisted in determining student preferences in health topics, information sources, dissemination channels and information formats. The data was also used to determine health information literacy gaps with the objective of determining the key information dissemination activities to be involved in health information dissemination programmes. The data from the readiness assessment was analysed to determine available resources and programmes. This assisted in determining existing gaps within the current health information dissemination programmes. An analysis of this data assisted in informing the design of the information dissemination framework.

The third phase involved the development of the information dissemination framework. The data that was gathered and analysed from the previous stages was merged with findings in literature to come up a more informed information dissemination framework. The data was then coded into coherent themes, to formulate the structure of the framework. The codes were

informed by the integrated information dissemination framework that was developed in Chapter 3, that include the source, content, medium, user and destination.

The third phase included the actual documentation of the framework in a coherent manner. Documentation (see Chapter 6) was done in line with the developed coding explained in Chapter 3. The stage also involved the development of conceptual models and data flow diagrams to illustrate interrelationships and information flows.

Harmsworth, Turpin and TQEF National Co-ordination Team (2000) argue that information dissemination theories should be exhaustive. Therefore, the resultant health information dissemination framework is broader, covering the important issues pertaining to programme objectives up to implementation. It is a blueprint that informs the design of practical health promotion programmes. The framework helps answer the following questions (Harmsworth, Turpin and TQEF National Co-ordination Team, 2000):

- i. What does the programme seek to achieve?
- ii. What are the tangible and intangible costs and benefits?
- iii. When and how is the project implemented?
- iv. Who will be tasked with disseminating the information?
- v. Who is the target audience?
- vi. What will be disseminated?
- vii. Which information dissemination methods should be used?
- viii. What are the short term and long term targets?
- ix. How will the programme be evaluated?

4.9 Ethical Considerations

Anyone intending to undertake research, or who is involved in research needs to be conscious of the general agreements about what is proper and improper in scientific research (Babbie, 2004). In observing moral ethics, the researcher ensured that the rights of respondents were

not violated. Health related matters are highly sensitive and warrant a lot of privacy. For this reason, the researcher took extreme care in addressing ethical issues that relate to the study.

4.9.1 Approval to Carry Out the Study

The researcher sought permission, and received approval from NUST and the Medical Research Council of Zimbabwe (MRCZ) to carry out the study.

4.9.2 Protecting Privacy and Confidentiality

Before undertaking this research, the researcher informed the respondents about the intentions and objectives of carrying out this research. Necessary steps were taken to inform the respondents about their right not to participate in any section of the research if they so wish.

The researcher protected the anonymity of the research participants and the confidentiality of their disclosures unless they consented to the release of personal information (Wiles et al., 2006). Therefore, respondents were asked to remain anonymous so as to protect their privacy. Moreover, the researcher assured the respondents that the responses which they provide during the study will not have any negative impact on them currently or in the future. The researcher ensured that the data was held with strict privacy and for educational purposes only.

4.9.3 Informed Consent

Consent was sought from the students and staff members who were willing to participate in the study. The researcher asked the would-be participants if they are willing to release the information needed by the researcher. They were told that they are free to withhold any information or feel free to 'walk out' of the research at any given point in time if they so wished (see appendices H-K for the informed consent letters).

4.10 Chapter Summary

This chapter presented the research design and methods adopted in this study. The chapter justified the use of Constructivist Grounded Theory, as an alternative to classic grounded theory when developing needs-based frameworks. The Constructivist Grounded Theory was chosen due to its flexibility in accepting obdurate and multiple realities. Therefore, the research strategies adopted in this study can be characterised as the combination of qualitative and quantitative strategies.

The chapter details the use of the case study research design and its justification for investigating students' health information needs and health information dissemination strategies at NUST. The detailed processes and the methods of conducting the questionnaire survey, structured interviews, and focus groups were described. Details pertaining to gathering and use of primary and secondary literature were also described. The chapter further indicated how issues of validity and reliability were addressed through the use of several data gathering methods. The final sections of this chapter describe the data collection and analysis procedures, together with the ethical considerations for data collection. The next chapter looks at data analysis and presentation of findings.

CHAPTER 5

RESEARCH FINDINGS

5.1 Introduction

The study aimed at documenting the process of developing a needs-based integrated framework for disseminating health information to undergraduate students. The first objective was to assess the health information needs of undergraduate students. The ultimate objective was to develop a user-centred dissemination framework, guided by applicable information dissemination principles and procedures drawn from the literature. This chapter therefore organizes and reports the study's main findings on health information needs, evaluation of existing health information dissemination methods, and applicable information dissemination principles and procedures. These are the key areas that informed the development of the framework that is described in detail in Chapter 6. The variables that were measured are in line with the integrated theoretical framework (see see Table 3.1). The narrative description of data is complemented by graphs, charts, tables and figures. The findings that are presented were gathered from undergraduate students, the Dean of Students, the Student Counsellor, and the Nursing Sister from NUST, as well as from literature reviewed for the study. Data from the participants was collected using questionnaires, interviews and focus group discussions. Six hundred questionnaires (600) were distributed to undergraduate students and 426 were successfully completed and returned, effecting a response rate of 71%. Quantitative data was analysed using *SPSS* version 21.0 and qualitative data was analysed using content analysis.

5.2 Demographics of Undergraduate Students

The study focused on the demographic characteristics of the undergraduate students in order to determine the relationship that exists between age, gender and health information needs. The study used Pearson's Chi-Square Tests to establish the relationships. The Chi-square Test is used to determine whether there is a statistically significant difference between

variables. Statistical significance is realised if the calculated value is lower than the universally accepted level of significance of $p=0.05$. The researcher performed a series of tests and came up with some interesting relationships that were explained under certain dependent variables that define health information needs. An attempt has been made to present only the data that shows significant relationships.

5.2.1 Age

Figure 5.1 shows that the majority of the respondents (80%) were from 20 to 25 years of age, followed by those who were 20 years and younger. The results show that most university students are young adults. A cross tabulation of the data showed that there is no statistically significant relationship between age and variables such as general health, health topics, media and channels preferred. In other words, age as the independent variable in this case did not determine health information needs amongst the students.

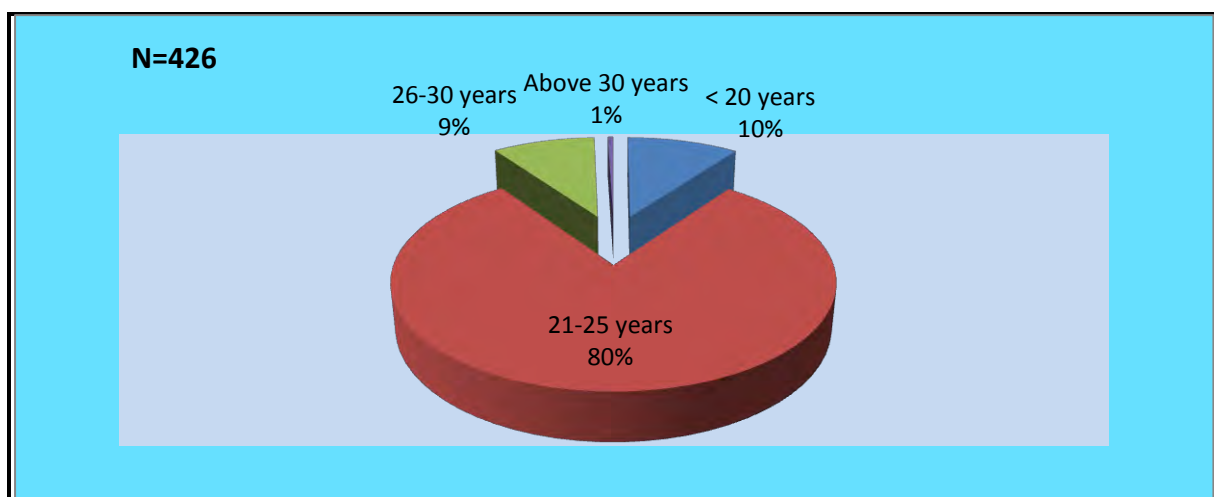


Figure 5.1: Age of Respondents

5.2.2 Gender

The results in Figure 5.2 reveal that 59% male students and 41% female students participated in the study. This corresponds with the enrolment ratio at NUST of 3155 male students and 2104 female students.

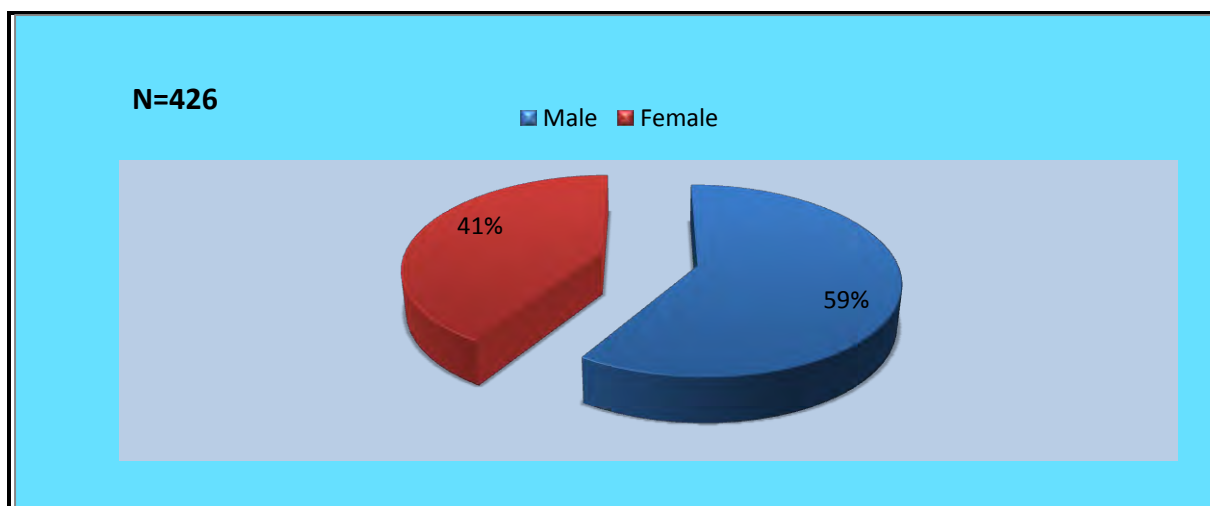


Figure 5.2: Gender of Respondents

There was a need to determine how gender affected students' description of their health. This was done to inform the design of specific health intervention programmes. After conducting a significance test to determine the relationship between gender and general health description, the results, as shown in Table 5.1, reveal that there is no statistically significant relationship between gender and general health. Rather, there was a significant relationship between gender and choice of health topics, as described later under Section 5.3.

5.2.3 Faculties

The researcher used the stratified random sampling technique to ensure that every participant had an equal chance to participate in the development of the needs-based information dissemination framework. The results depicted in Figure 5.3 shows the responses by faculty. The results did not reveal any significant relationship between faculty and any aspect of health or life skills.

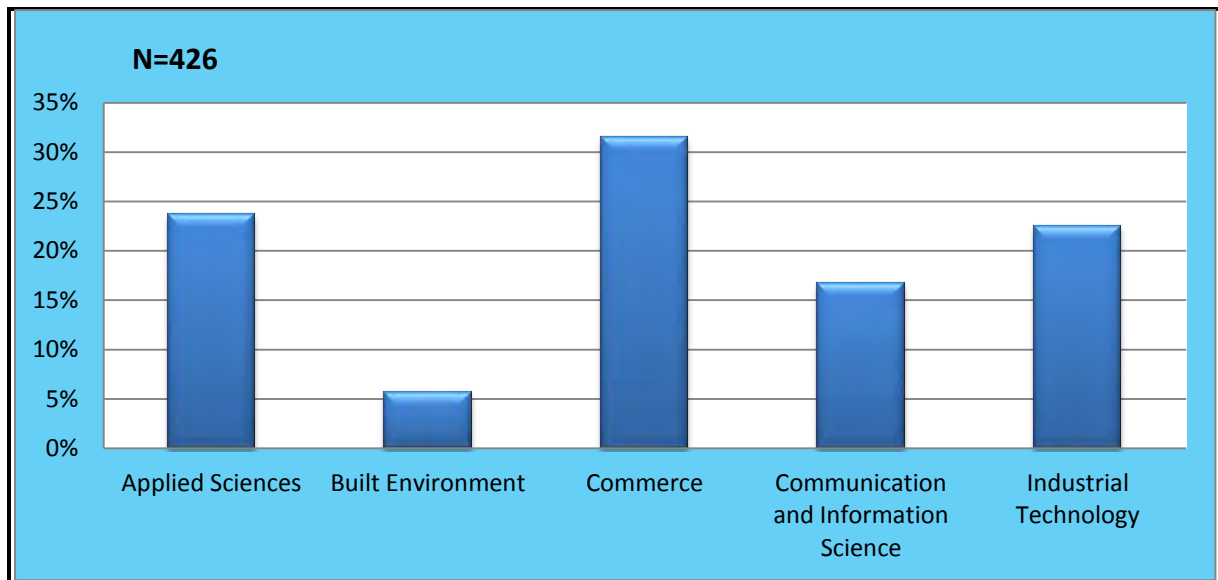


Figure 5.3: Faculties

5.2.4 Programmes

The data presented in Figure 5.4 reveal that the majority of the participants (97%) were conventional students (students who learn during the day), while 3% were parallel students (students who learn during the evening). An analysis of data revealed no statistical significance between the programmes and health information needs.



Figure 5.4: Programmes

5.3 Health Information Needs of Students

The first objective of the study was to determine the health information needs of the students. This section therefore addresses the first critical research question: What are the health information needs of undergraduate students at NUST? This was an important step in developing a needs-based health information dissemination framework. The study used a broad (Salutogenetic) definition of health information needs that was proposed in Chapter 2. The definition of health information needs that was proposed for this study includes content (topics), channels, formats and skill gaps as variables that define health information needs. Therefore this section presents data on these variables. The data highlights the preferences of students in these key areas as well as an evaluation of their skills. The ultimate objective was to inform the design of the information dissemination framework.

This section therefore deals with health information needs in a comprehensive manner. The dimensions of health information needs presented include health topics (see Section 5.3.2), life skills (see Section 5.3.3), health information literacy skills (see Section 5.3.4), and preferred health information sources, formats and media (see Section 5.3.5).

5.3.1 General Health Description

The students were asked to describe their health condition as a precursor in understanding their health information needs. The results indicate that generally, students have a positive perception regarding their health. The results reveal that the majority (36%) of the respondents indicated that their health is ‘excellent’, 33% thought they have ‘good’ health. A considerable number (22%) highlighted their health status as ‘fair’. A very few number of students (3%) thought they had poor health and 4% of them did not know of their general health status. Figure 5.5 shows that more students perceive themselves as having excellent or good health and very few think they have poor health.

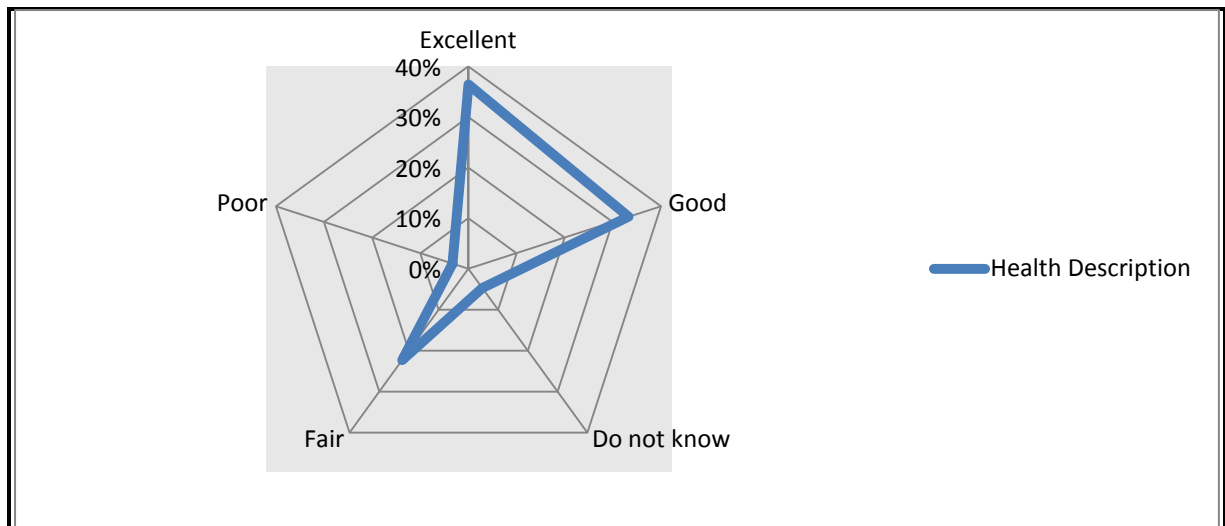


Figure 5.5: Radar Chart for Student Health Description

The data was analysed to determine whether gender influenced respondents' description of their health. A cross tabulation of data using the Pearson Chi-Square Tests did not find any significant relationship between the two variables. As shown in Table 5.1, the calculated value of 0.078 is greater than $p=0.05$, the universally accepted level of significance. This means that there is no statistically significant dependence between gender and general health description.

Table 5.1: Students' Health and Gender

N=426	Value	df	Asymp. Sig. (2- sided)	Monte Carlo Sig. (2- sided)			Monte Carlo Sig. (1- sided)		
				Sig.	95% Confidence Interval		Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	8.407 ^a	4	.078	.082 ^b	.056	.108			
Likelihood Ratio	9.177	4	.057	.054 ^b	.033	.075			
Fisher's Exact Test	8.646			.068 ^b	.044	.092			
Linear-by-Linear Association	2.464 ^c	1	.116	.101 ^b	.072	.130	.059 ^b	.036	.081
N of Valid Cases	426								

5.3.2 Health Topics Preferred

Students were asked to specify their health information needs by ticking on specific health topics. The results, presented in Table 5.2, indicate that students require information on almost every health topic. The predominant topics are: physical activity (89.9%); access to health facilities (85.7%); how to help others in distress (84.7%); nutrition (82.9%); and, HIV and AIDS and STI (80.5%). The least sought after topics are suicide prevention (47.7%), and tobacco use (41%).

During focus group discussions, some students indicated that they also needed information on managing natural remedies, chronic illnesses, and information on chronic diseases such as cancer. The Dean of Students and the Nursing Sister highlighted that students mainly seek information on ‘contemporary health problems’, especially on sexual and reproductive health issues, HIV and AIDS, STIs, physical exercises, hygiene, and on chronic illness. The Student Counsellor indicated that most students who approach her office seek information on sexual and reproductive health, HIV and AIDS and emotional health. Students were free to express their health information needs during the focus group discussions and the most cited topics during the discussions were sexual and reproductive health, physical activity, emotional health, and access to health facilities. Other topics mentioned in the discussions include nutrition, chronic illness, managing relationships and HIV and AIDS.

Table 5.2: Preferred Health Topics

Health Topics (N=426)	Yes (Freq)	(%)	No (Freq)	(%)
Physical activity	334	89.9	43	10.1
Access to health facilities	365	85.7	61	14.3
How to help others in distress	361	84.7	65	15.3
Nutrition	353	82.9	73	17.1
HIV and AIDS and STI prevention	343	80.5	83	19.5
Stress reduction	334	78.4	92	21.6
Access to medical insurance cover	321	75.4	105	24.6
Injury prevention	317	74.4	109	25.6
Depression and anxiety	310	72.8	116	27.2
Relationship difficulties	302	70.9	124	29.1
Problems associated with Internet/computer games	293	68.8	133	31.2
Cold/Flu/Sore throat	273	64.1	153	35.9
Accommodation	272	64.0	153	36.0
Alcohol & other drug use	265	62.2	167	37.8
Sleeping difficulty	265	62.2	161	37.8
Violence prevention	265	62.2	101	37.8
Eating disorders	263	61.7	163	38.3
Grief and loss	262	61.5	104	38.5
Sexual assault/ relationship violence	239	56.1	187	43.9
Pregnancy prevention	205	48.1	221	51.9
Suicide prevention	203	47.7	223	52.3
Tobacco use	175	41.1	251	58.9

An analysis of the data managed to establish a significant relationship between gender and choice of specific health topics. The health topics which had a significant statistical relationship are: stress reduction; HIV and AIDS; alcohol and drug abuse; depression and

anxiety; grief and loss; how to help others in distress; nutrition; physical activity; pregnancy prevention; relationship difficulty; sexual assault; and, violence prevention.

Using Pearson's Chi-Square Tests, the calculated values should be less than $p=0.05$, for there to be a significant relationship between two variables. Table 5.3 shows that more females need information on stress reduction than males. The expected count for females was 137.2, but the actual count surpassed it and ended with an actual count of 147. However, this is not the case with the males who had an expected count of 196.8 but ended up with a lower frequency of 187. This shows that more females need health information on stress reduction.

Using the same analysis it becomes clear that more females than males prefer more information on depression and anxiety, grief and loss, how to help others in distress, nutrition, pregnancy prevention, relationship difficulty, sexual assault, and violence prevention. The data also shows that more males than females have interest on information on HIV and AIDS, alcohol and drug abuse, and physical activity.

The data that describes these relationships is presented in Figure 5.3. The data was extracted from sections where the respondents had indicated 'yes' on specific health topics. The researcher summarised the data to show the interrelationships of the data that was extracted from the Chi-Square tests and cross tabulation tables. This was deliberately done to enhance comparisons between health topics and gender.

Table 5.3: Chi-Square Test for Gender and Health Topics

Health Topic N=426	Value	df	Asymp. Sig. (2- sided)	Gender			
				Male		Female	
Stress reduction	5.494 ^a	1	.019	Count 187	Expected count 196.8	Count 147	Expected count 137.2
HIV and AIDS	8.760 ^a	1	.003	Count 214	Expected count 202.1	Count 129	Expected count 140.9
Alcohol and drug abuse	27.590 ^a	1	.000	Count 182	Expected count 156	Count 83	Expected count 108.9
Depression and anxiety	13.573 ^a	1	.000	Count 166	Expected count 182.7	Count: 144	Expected count 127.3
Grief and loss	7.323 ^a	1	.007	Count 141	Expected count 154.4	Count 121	Expected count 107.6
How to help others.	23.504 ^a	1	.000	Count 195	Expected count 212.7	Count 166	Expected count 148.3
Nutrition	8.247 ^a	1	.004	Count 197	Expected count 208.0	Count 156	Expected count 145.0
Physical activity	4.290 ^a	1	.038	Count 232	Expected count 225.7	Count 151	Expected count 157.3
Pregnancy prevention	55.468 ^a	1	.000	Count 83	Expected count 120.8	Count 122	Expected count 84.2
Relationship difficulty	11.940 ^a	1	.001	Count 162	Expected count 177.9	Count 140	Expected count 124.1
Sexual assault	56.325 ^a	1	.000	Count 103	Expected count 140.8	Count 136	Expected count 98.2
Violence prevention	8.246 ^a	1	.004	Count 142	Expected count 156.1	Count 123	Expected count 108.9

5.3.3 Critical Life Skills

This study looked at the concept of health from a Salutogenetic perspective whereby individuals should possess critical life skills for them to cope and thrive in their environments. Antonovsky's (1987) and Lindström (2010) emphasize the need for individuals to develop life skills such as decision making and health information literacy. Therefore, critical life skills of the respondents were evaluated to highlight the strengths and skill gaps. Alzougool, Chang and Gray (2008) called these 'unrecognised' information needs, since individuals do not consciously recognise them. Skill gaps were therefore viewed as needs themselves which need to be addressed when developing and implementing health intervention programmes. The four key skills that were assessed are: problem solving and decision making; identity development; interpersonal communication; and, health maintenance.

5.3.3.1 Problem Solving Skills

The researcher identified a number of aspects that relate to problem solving, namely, accessing and analysing information, identifying and solving problems, setting goals, managing time and resolving conflicts. It was interesting to note that the majority students indicated that they had above 'average' to 'excellent' skills in all these areas. However, on the negative side, a significant number of respondents 65 (15%) indicated that they are 'poor' in managing time and 28 (7%) indicated that they are poor in goal setting. This should be a matter of concern since managing time and goal-setting are critical skills for university students. Figure 5.6 captures the findings on students' problem solving skills.

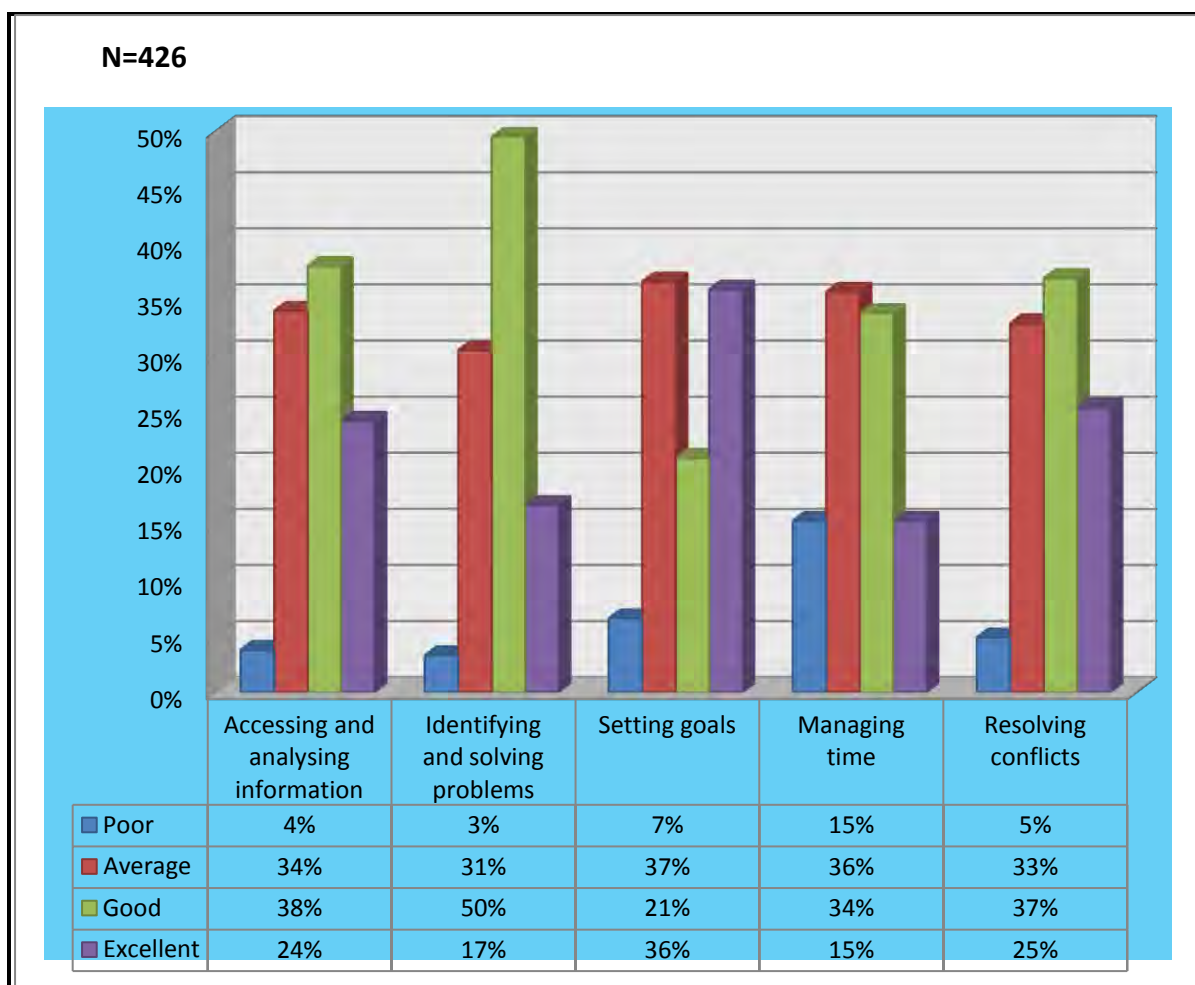


Figure 5.6: Problem Solving Skills

5.3.3.2 Identity Development

Identity development is one of the key skills that should be possessed by a university student. Antonovsky (1987) argued that achieving wellness is determined by two basic factors, that is, “Generalised Resistance Resources” (GRRs) and a “Sense of Coherence” (SOC). The SOC is the capability to perceive that one can manage in any situation independent of whatever is happening in life. According to Antonovsky, if a person believes there is no reason to persist and survive and confront challenges, if she has no sense of meaning, then she will have no motivation to comprehend and manage events. Identity development was therefore assessed to determine students’ perception of life and their ability to successfully manage the infinite number of complex stressors that they encounter in university life. The variables that were reviewed include: developing awareness of personal and emotional identity; maintaining self esteem; clarifying values; and, developing meaning of life.

The findings, as indicated in Figure 5.7, reveal that the majority of respondents indicate that they have ‘good’ to ‘excellent’ skills in all the aspects related to identity development. The results show a positive and encouraging trend on maintaining self esteem and developing meaning of life, which are the most important critical life skills that influence the overall health of university students.

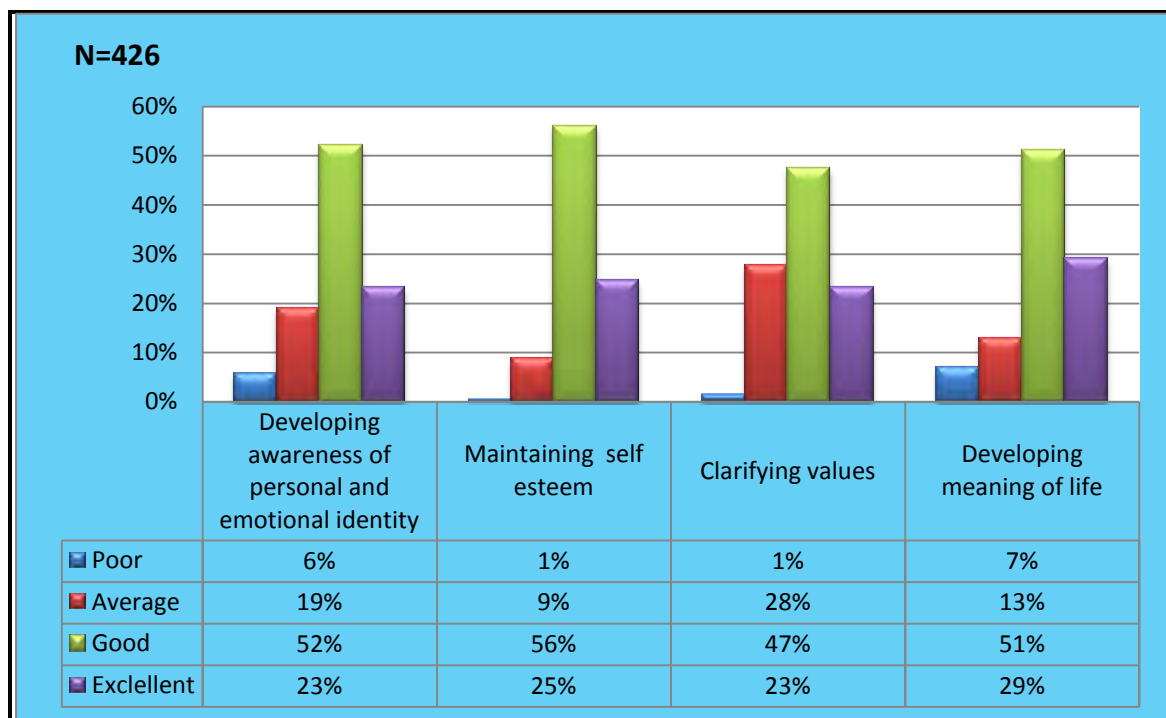


Figure 5.7: Identity Development

5.3.3.3 Interpersonal Communication

Interpersonal communication was identified as one of the key skills in life. One’s ability to communicate effectively and to participate in society enables one to confront and overcome health challenges (Lindström, 2010). The researcher identified and assessed the following issues to do with interpersonal communication: establishing relationships; participation in community activities; managing interpersonal intimacy, and articulating clear expression of thought.

The findings shown in Figure 5.8 reveal that overall the majority indicated that they had ‘good’ skills in all areas related to interpersonal communication. They scored ‘excellent’ on articulating clear expression and thought and on establishing relationships. The respondents scored low on participating in community activities.

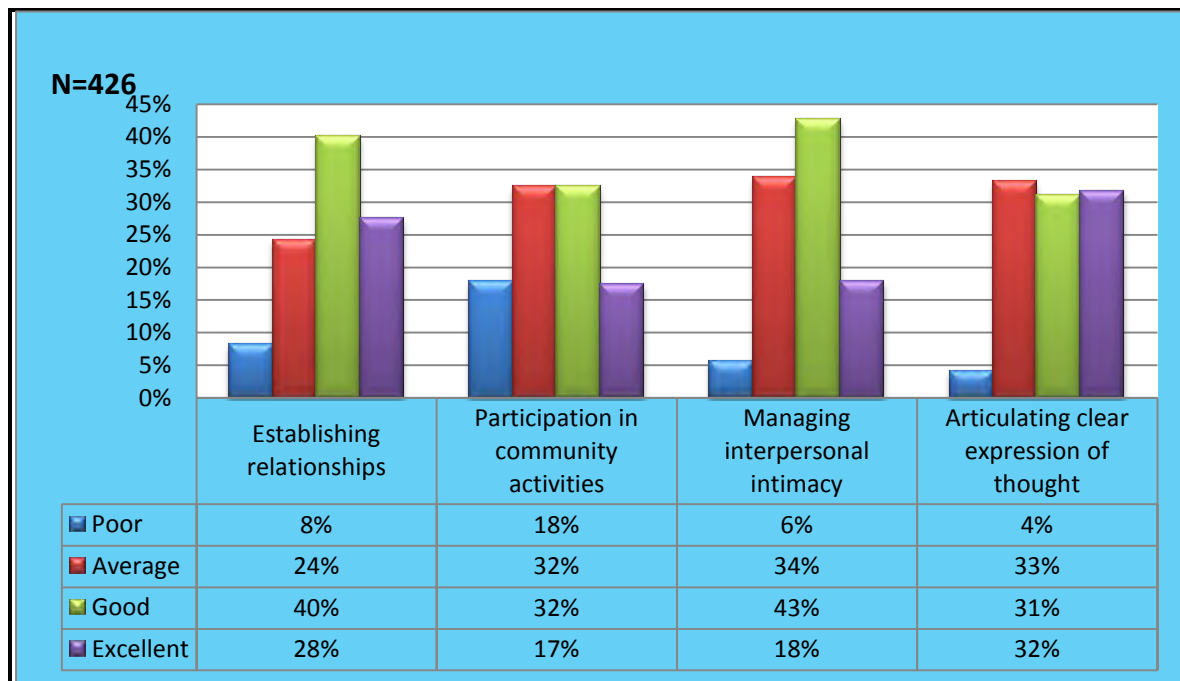


Figure 5.8: Interpersonal Communication

5.3.3.4 Health Maintenance

Health maintenance is one of the critical life skills that were studied to determine the health information needs of students. The findings in this area helped in identifying information needs in line with the following variables: nutritional control; weight control; physical fitness; selection of leisure activities; and, understanding sexuality.

The majority of the respondents indicated that they have ‘average’ to ‘good’ skills on health maintenance, notably in understanding sexuality and selection of leisure activities. A significant number of students indicated that they are ‘poor’ in weight control and nutritional control (see Figure 5.9 for a detailed presentation of the results on health maintenance skills).

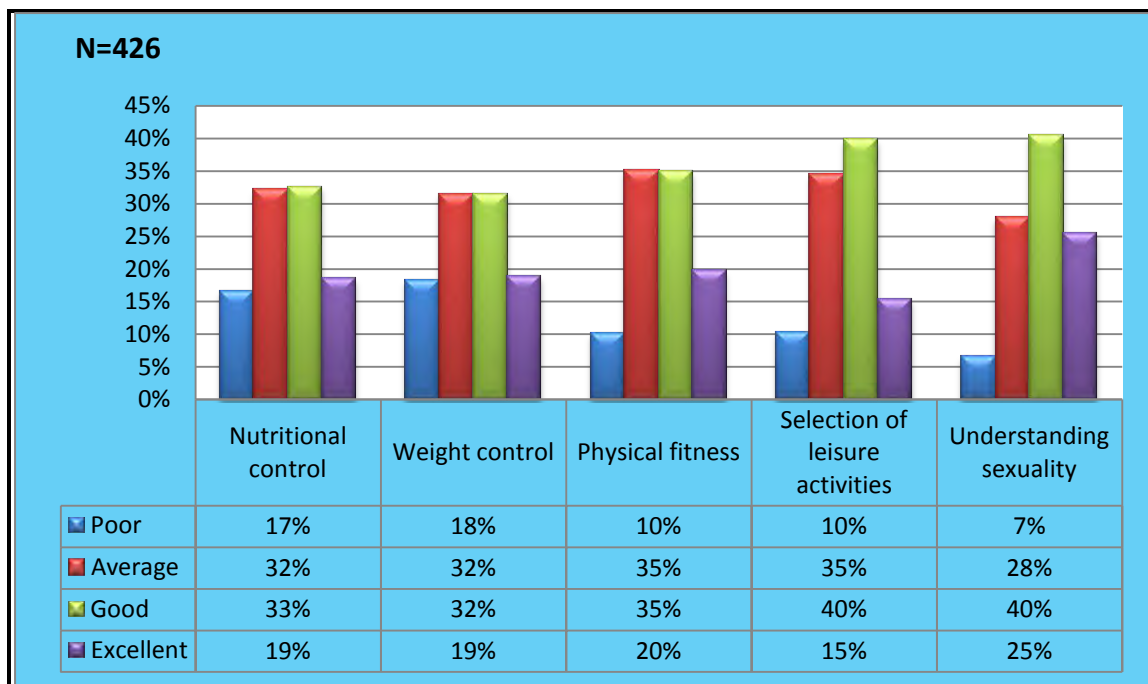


Figure 5.9: Health Maintenance

5.3.4 Health Information Literacy Skills

Health information literacy refers to the individual's ability to access, evaluate and to use health information effectively. There was a need to determine students' ability to locate evaluate and use health information without assistance. Miranda and Tarapanoff (2008) and Chiu and Wu (2012) support the notion of individual information searching skill gaps as part of information needs. Effective information dissemination strategies should therefore recognise health information literacy as an important element in addressing health information needs. The researcher identified four key dimensions of health information literacy: searching for health information; understanding health information; evaluating health information; and, using health information.

The findings indicate that overall, as depicted in Figure 5.10, most students regard themselves as having average health information literacy skills, especially in searching, understanding and evaluating health information. A few respondents considered themselves 'excellent' in understanding, using, searching and evaluating information. It was also interesting to note that a significant number 130 (31%) of the respondents consider themselves 'good' in using

health information and 125 (29%) thought that they are ‘good’ in searching for information. However, a significant number of respondents indicated that they are ‘poor’ in searching for health information 109 (25%), evaluating health information, 101 (24%), and using health information 98 (23%). The students highlighted that they had problems with evaluating health information because medical literature is riddled by jargon. They argued that simplification of health information and training in health information literacy will enable them to effectively utilise health information.

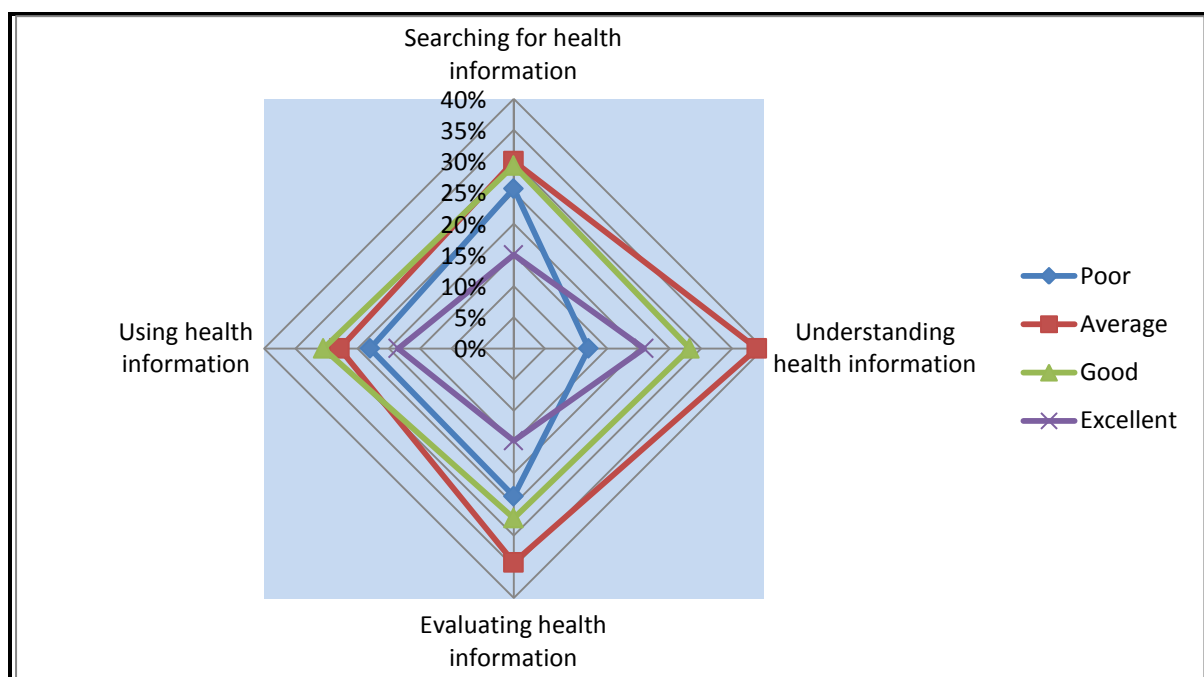


Figure 5.10: Health Information Literacy Skills

5.3.5 Preferred Information Sources, Formats and Channels

The study incorporated preferred information sources as another dimension of health information needs. The respondents were asked to indicate their preferred health information sources. The results, presented in Table 5.4, indicate that generally, the more students (46%) prefer to consult a Nursing Sister (Mean 1.54) for their health information needs followed by peers 183 (43%) and community health educators 183 (43%). The least to consult are the teaching staff 65 (15%) (Mean 1.85). Students also highlighted during focus group discussions, personal doctors and the Internet as preferred health information sources during

focus group discussions. However, students raised the concern that NUST needs to increase its bandwidth and Wireless Fidelity (WIFI) services so that they can reap maximum benefits from Internet and web- based health services.

Table 5.4: Preferred Information Sources

	N	Frequency	Mean	Std. Deviation
Nursing Sister	426	194	1.54	.499
My Peers	426	183	1.57	.496
Community health educators	426	183	1.57	.496
NUST website	426	180	1.58	.495
Student Counsellor	426	131	1.69	.462
Teaching staff	426	65	1.85	.360

The study sought to understand students' choice of format when receiving and accessing health information. Results in Table 5.5 show that students prefer to receive health information electronically (mean 1.36) and the least preferred method is audio (mean 1.77)

Table 5.5: Preferred Information Formats

	N	Frequency	Mean	Std. Deviation
Electronic	426	271	1.36	.482
Video	426	229	1.46	.499
Print	426	209	1.51	.500
Audio	426	99	1.77	.423

The respondents were asked to indicate the media or channels that they prefer for accessing or receiving health information. As shown in Table 5.6, the cell phone was cited as the most preferred method for receiving health information (Mean1.48) and followed by workshops. Workshops were favoured by students due to their interactivity and cost effectiveness.

The students cited that the Short Message Service (SMS) is a convenient means for receiving health information and for sending queries. Doing health related courses and printouts were the least preferred methods for receiving health information. Other channels that were cited during focus group discussions included seminars, social media applications, conferences and comedy shows. The idea of using social media for health information dissemination raised controversies during focus group discussions. Some student felt that these tools should not be used to disseminate health information because they are not authoritative. However, some students cited that certain tools such as blogs, wikis and Facebook can be useful for sharing health information amongst students. RSS feeds were cited as convenient for receiving health information.

Table 5.6: Preferred Information Media and Channels

	N	Frequency	Mean	Std. Deviation
Cell phone	426	221	1.48	.500
Workshops	426	207	1.51	.500
Social networking sites (e.g. Facebook)	426	195	1.54	.499
NUST website	426	182	1.57	.495
E-mail	426	179	1.58	.494
Face-to-face	426	169	1.60	.490
Printouts (posters, brochures, etc.)	426	169	1.60	.490
Health related courses	426	142	1.67	.472

This section presented results on health information needs of undergraduate students at NUST. It began by presenting data on the general health of students and went on to review students' preferences on health topics, sources, channels and formats. Data on students' health information literacy and life skills was also presented in this section, in line with the broader, Salutogenetic definition of health that was proposed by the study. A summary of the findings on health information needs is provided in Section 5.6. The next section looks at the third key research question on procedures in developing and implementing a needs-based information dissemination framework.

5.4 Procedures in Developing and Implementing a Needs-Based Framework

The key objective of this study was to document the processes that are followed in the design and implementation of a needs-based health information dissemination framework. This section addresses the third critical research question of the study: What is the process to be followed when developing and implementing a needs-based framework for disseminating health information to undergraduate students? The researcher used the formative evaluation technique in developing the framework. The data that was used to inform the design was gathered from students, the Dean of Students, Student Counsellor, and a systematic review of literature. Data that was gathered from literature (Jed Foundation, 2008, 2009, 2011; Power and Hunter, 2001; RAND Corporation, 2004; Leurs et al., 2005; Edwards et al., 2008) guided the documentation of the procedures.

Leurs et al. (2005) used formative evaluation when developing a collaborative model to improve school health promotion in the Netherlands. Their so called School-Beat Project used broad gathering of data, literature review, stakeholder interviews and consultation with experts when developing a model school-based health intervention strategy. The steps that were taken in their study include problem identification, stakeholder consultation on design issues, needs analysis, identification and implementation of interventions, and developing evaluation criteria (impact evaluation). It is important to note that the procedures that are taken in developing information dissemination frameworks are not necessarily linear but they are iterative (Leurs et al., 2005).

Power and Hunter (2001) also used formative evaluation to develop a strategy for community-based health promotion targeting homeless populations in London, Brighton and the West Midlands. Their study included the following steps:

- i. Identification of health promotion needs of homeless people;
- ii. Description of the social networks of the vendors themselves;
- iii. Assessment of the practical feasibility of involving the vendors in peer education training and delivery; and,
- iv. Development of relevant health promotion materials

The Jed Foundation (2009) provided some important insight into the procedures that are normally followed in designing and implementing health promotion strategies. The Jed Foundation's mission is to promote emotional health and prevent suicide among college and university students in the United States of America. They proposed the steps that are summarised in Figure 5.11 below.

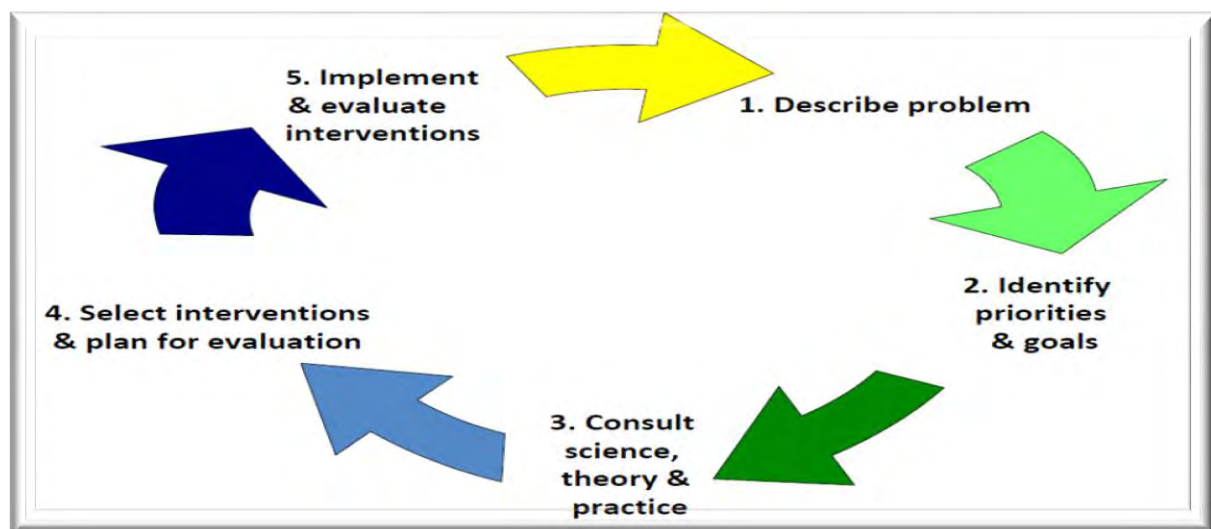


Figure 5.11: Procedures in Developing and Implementing Health Interventions (Source: Jed Foundation, 2009)

It is interesting to note that the development of the health information dissemination frameworks in the cases described above used somewhat similar approaches, although the terminology used to describe the stages is different. For example, the term ‘problem description’, that was used by The Jed Foundation incorporates needs and resource analysis, which is the same approach that was used by Leurs et al. (2005) and Power and Hunter (2001).

This study borrows insight from previous health information dissemination projects described above. The study therefore proposes 5 steps in the development and implementation of a needs-based health information dissemination framework:

- i. Problem description (Needs and resource analysis);
- ii. Identify priorities;

- iii. Consult science, theory and practice;
- iv. Select interventions and plan for evaluation; and,
- v. Implement and evaluate interventions.

As highlighted earlier, this study used formative evaluation in the development of the information dissemination framework. The study started by looking at student health needs analysis to determine the topics, content, media, and formats that should inform the design of the framework. The needs analysis was done within the Salutogenetic framework of health information needs. The integrated theoretical framework described in Chapter 3 guided the process of determining the health information needs of undergraduate students. The following are the various steps that are taken when developing a needs-based health information dissemination framework. The data that was presented in this section was guided by the literature. This is in line with the argument that was raised earlier on in the methodology that the development of theory using the constructivist grounded perspective is guided by continual reference to the data and literature (Hussey, 2003; Suddaby, 2006).

5.4.1 Describe the Problem and Its Context

The Jed Foundation (2011: 9) proposes that problem description should be the first step towards developing health interventions. This first major step involves two key activities: Needs analysis and Readiness and resource assessment.

5.4.1.1 Needs Analysis

As has been already highlighted, developing and implementing a needs-based health information dissemination framework follows deliberate and iterative procedures. The first step that should be followed (needs analysis) has been addressed under Section 5.3 of the study. This step is viewed as a precursor in designing health intervention programmes. Studies carried out by Power and Hunter (2001) and Leurs et al. (2005) began with a health needs analysis when developing integrated models for health information dissemination. The Jed Foundation (2011: 9) also asserts that “a careful and thorough problem assessment provides campus leaders with objective data about the problems students’ experience”.

The next section (Section 5.4.1.2) deals with the second activity under problem description (Readiness and resource assessment) whereby the researcher evaluated the current health information dissemination practices at NUST.

5.4.1.2 Readiness and Resource Assessment

This important step was concerned with “looking at what is currently in place”, and “what has been done in the past to address [health] problems” (Jed Foundation, 2008). This section addressed the second critical research question: To what extent is NUST meeting the health information needs of undergraduate students? As part of formative evaluation, the study goes beyond a description of current health information dissemination practices. The study identifies gaps within the current information dissemination practices. This study attempted to address these gaps in the proposed information dissemination framework that is described in the next chapter (Chapter 6).

Edwards et al. (2008) propose that a readiness assessment can help to identify the types of programmes that are appropriate to initiate, based on the stage of readiness of administrators and stakeholders. Therefore, an assessment of existing health information dissemination practices was necessary in the development of the information dissemination framework. An assessment of the individual and institutional factors that are likely to facilitate or impede change through readiness and resource assessments can help to identify resources and obstacles ahead of time. The readiness assessment focused on existing health information dissemination practices with the objective of identifying gaps and strengths in the topics being disseminated, the sources used, the content and the media and channels used for health information dissemination.

5.4.1.2.1 Evaluation of Health Information Received

Undergraduate students at NUST were asked whether they have received health information from the university. The results presented in Table 5.7 show that more than half of the population (53.1%) indicated that they had not received any health information from NUST.

The same sentiments were raised in the focus group discussions whereby most students highlighted that they have not received any health related information at campus.

Table 5.7: Health Information Received from NUST

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	200	46.9	46.9	46.9
No	226	53.1	53.1	100.0
Total	426	100.0	100.0	

The study sought to identify any gaps in terms of health information dissemination at NUST. The researcher asked the students whether they had received information on certain health topics that were listed in the questionnaire (see Appendix A). The findings reveal that there is a big gap between the topics that are being disseminated and the topics that are needed by the respondents. Table 5.8 shows that there is a deficit in all the health topics. The biggest gaps are on how to help others in distress (80.5%), physical activity (76.3%), stress reduction (73.2%), and nutrition (72.1%).

The gap in health information dissemination was highlighted during focus group discussions. The students raised the point that NUST disseminates a limited number of health topics on the available platforms. This was also reiterated by the Student Counsellor who said that although the university works closely with different stakeholders in disseminating health information, there is still more to be done on the coverage of the health topics. The Dean of the Students also highlighted the need to disseminate more information on health topics to the students. Another issue that was raised by the students was the visibility of the student counselling services. The findings reveal that the majority of students (73%) were not aware of the location of the student counselling services.

Table 5.8: Health Topics Received Compared to Topics Needed

Topic N=426	Preferred topics (%)	Received topics %	Mean difference %
How to help others in distress	84.7	4.2	80.5
Physical activity	89.9	13.6	76.3
Stress reduction	78.4	5.2	73.2
Nutrition	82.9	10.8	72.1
Access to health facilities	85.7	16.7	69
Depression and anxiety	72.8	6.3	66.5
Injury prevention	74.4	11	63.4
Problem use of Internet/games	68.8	9.4	59.4
Grief and loss	61.5	4	57.5
Eating disorders	61.7	4.5	57.2
Relationship difficulties	70.9	5.2	56.7
Sleeping difficulty	62.2	5.9	56.3
Access to medical insurance cover	75.4	19.2	56.2
Cold/Flu/Sore throat	64.1	8.2	55.9
Violence prevention	62.2	8.2	54
Alcohol & other drug use	62.2	14.3	47.9
Sexual assault/ relationship violence	56.1	11	45.1
HIV and AIDS and STI prevention	80.5	36.2	44.3
Suicide prevention	47.7	4.5	43.2
Accommodation	64.0	22.1	41.9
Tobacco use	41.1	5.6	35.5
Pregnancy prevention	48.1	15.7	32.4

5.4.1.2.2 Evaluation of Health Information Sources

The study sought to establish the information sources that are used by NUST for disseminating health information to students. This was done to determine whether the sources used to disseminate health information at NUST are relevant to the needs of the students. The findings from the interviews with the Student Counsellor and the Dean of the Students indicated that NUST mainly uses the Student Counselling Department, departmental

counselling services, the Nursing Sister, printouts (mainly posters, and flyers), workshops, and peer educators and sometimes mobile phones to disseminate health information.

The Dean of Students and the Student Counsellor pointed out that NUST is also actively engaging other key stakeholders from the health sector in the dissemination of health information on campus. The organisations that were mentioned include the National AIDS Council of Zimbabwe (NAC), Students And Youths Working on Reproductive Health Action Team (SAYWHAT), Population Services International (PSI), Medical Aid Societies, and qualified personnel from the Ministry of Health and Child welfare. The Dean of Students indicated that her department has established a resource centre where students can interact with key health practitioners from the government and the private sector.

However, when students were asked about the sources that they normally use in accessing health information at campus, they painted a negative picture of the campus-based health dissemination strategy. Most students indicated that they had not received health information from the sources that NUST uses to disseminate health information. This indicates that the usage of health information sources at NUST is low. However, in spite of the low usage, the most used source, according to the student questionnaire survey, was the Nursing Sister, followed by the Student Counselling Department. The least used source is the department counselling service. For those who ticked on the 'other' section, they highlighted that they use the Internet and web-based services to access health information on their own. Figure 5.12 captures the findings on information sources.

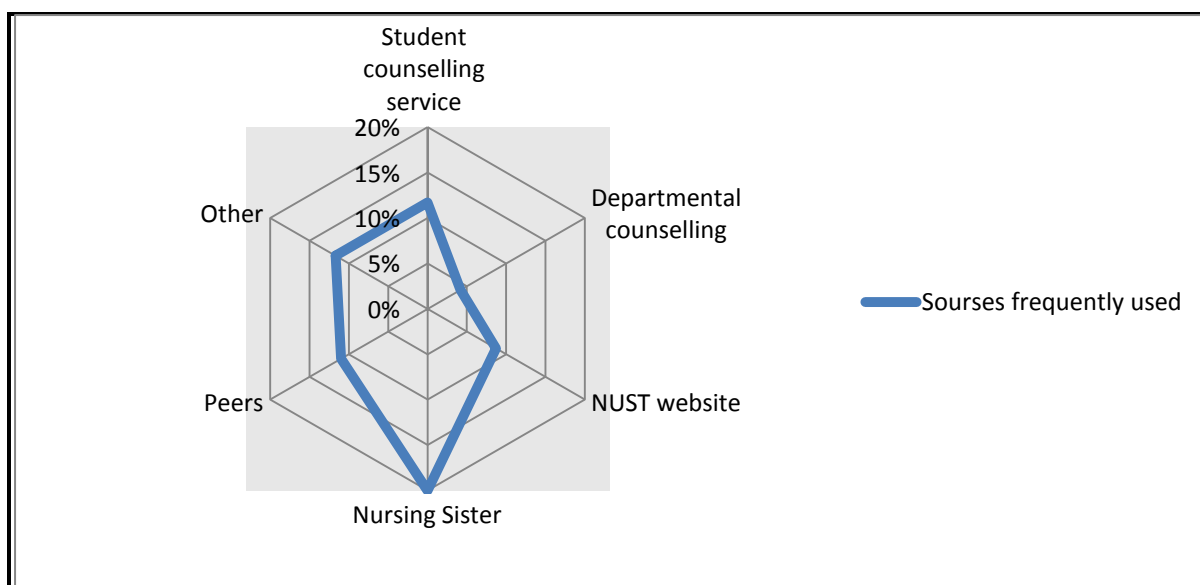


Figure 5.12: Sources Frequently Used

The students were asked to evaluate the sources of information in terms of their accessibility, trustworthiness, competence, experience, and sensitivity to user concerns. The results, depicted in Figure 5.13, indicate that the majority of respondents regard the health information sources as 'poor' in terms of accessibility and sensitivity to user concerns, and 'average' in terms of trustworthiness, competence and experience.

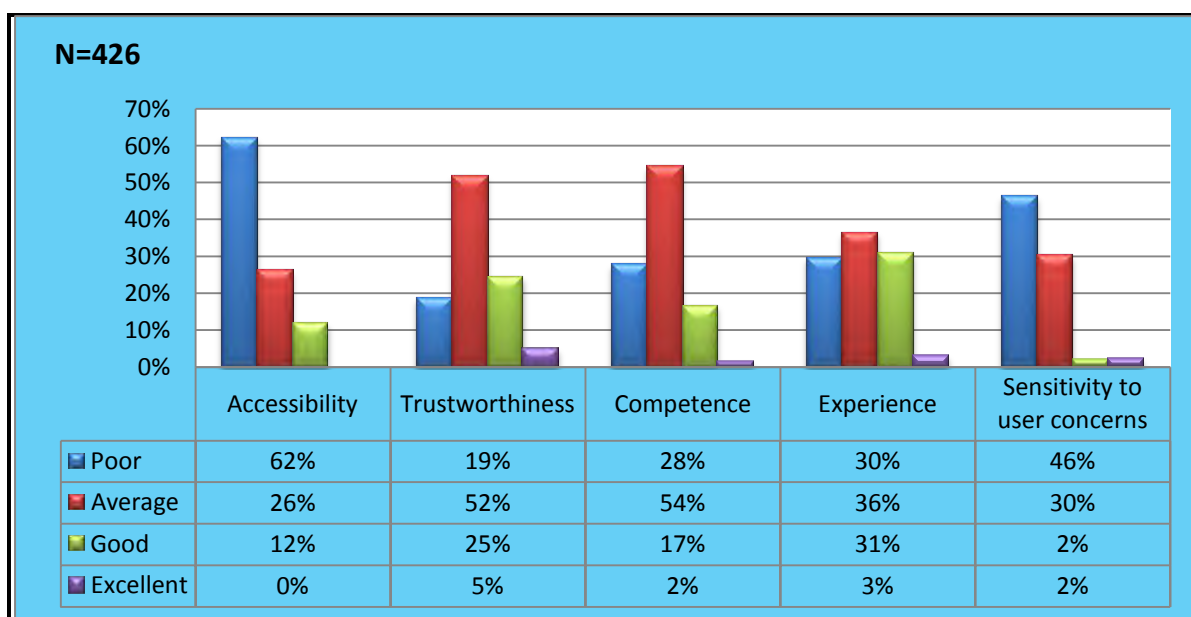


Figure 5.13: Evaluation of Sources

5.4.1.2.3 Evaluation of Health Information Content

NUST students were asked to evaluate the health information content in terms of its accuracy, comprehensiveness, relevance, simplicity, and cost effectiveness. It was interesting to note that a significant number of respondents 102 (42%) regarded the content as ‘poor’ in terms of its accuracy. The results in Figure 5.14 show that the majority of the respondents perceive the content as ‘average’ in comprehensiveness, relevance, simplicity, and cost effectiveness.

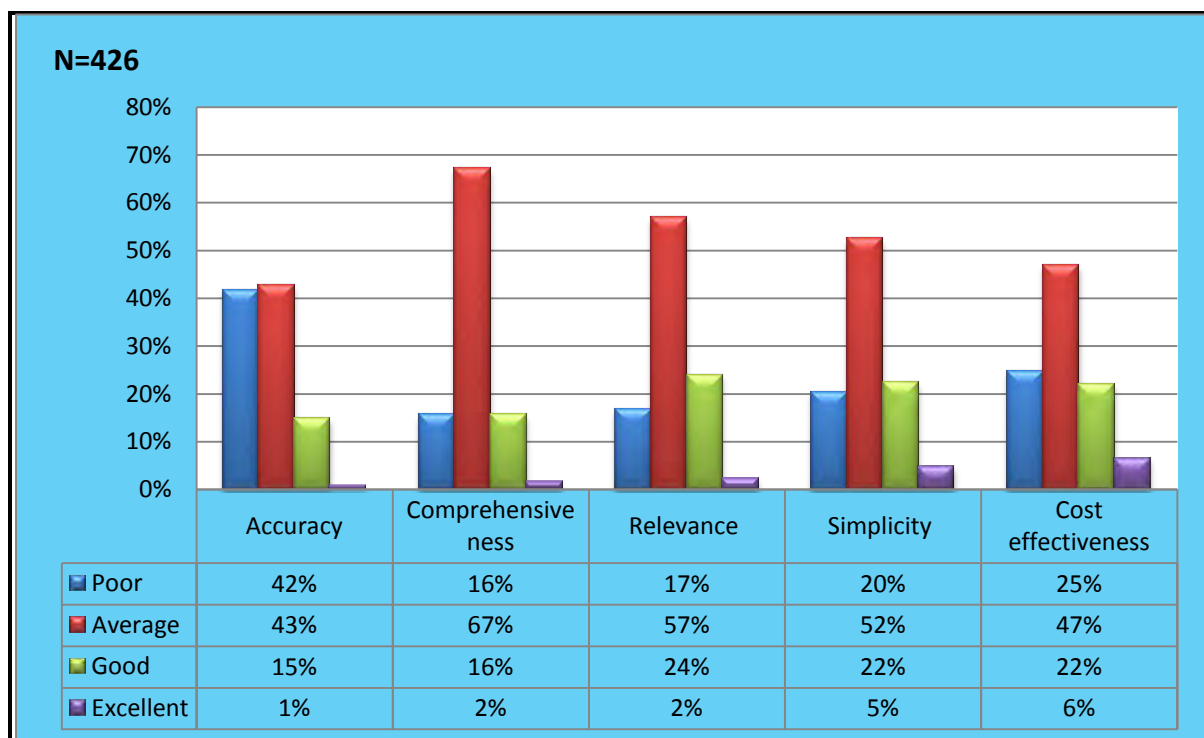


Figure 5.14: Evaluation of Content

5.4.1.2.4 Evaluation of Health Information Channels and Media

The findings from the study reveal that NUST uses a variety of channels to disseminate health information to students. These include workshops, a regular orientation programme, cell phones, printouts, flyers, and face-to-face encounters.

The study evaluated the existing channels and media to identify their strengths and weaknesses in disseminating health information. This was done to gather important

information that would inform the design of the information dissemination framework. The students were asked to indicate the channels or media that they have used to receive or access health information from NUST.

The results that are presented in Table 5.9 show that the university uses a variety of information media and channels in disseminating health information. Printouts are the most commonly used media for disseminating health information, followed by face-to-face interactions. E-mail is the least used channel for health information dissemination. During focus group discussions, the students cited that they do not frequently use the website because it rarely disseminates health information and it is not interactive.

Table 5.9: Information Channels and Media Used

	N	Frequency	Mean	Std. Deviation
Printouts (posters, brochures, etc.)	423	103	1.76	.430
Face-to-face	425	70	1.84	.371
Health related courses	423	45	1.89	.309
Workshops	425	35	1.92	.275
NUST website	422	28	1.93	.249
Cell phone	425	10	1.98	.152
Social networking sites	425	5	1.99	.108
E-mail	425	1	2.00	.049

The respondents were asked to rate the medium and channels that NUST uses to convey health information to students. Evaluation of the media was done in line with their capacity to reach the intended audience, accessibility and ease of use, timeliness, reliability, flexibility, user friendliness cost effectiveness, and clarity and attractiveness of the information ‘package’. The findings presented in Figure 5.15 reveal that the majority of respondents view the media and channels as ‘poor’ in almost all the areas, except in the areas of flexibility and cost effectiveness where the majority thought they are ‘average’. Furthermore, the students

felt that the Internet bandwidth is low and the WIFI coverage is inadequate for their Internet needs.

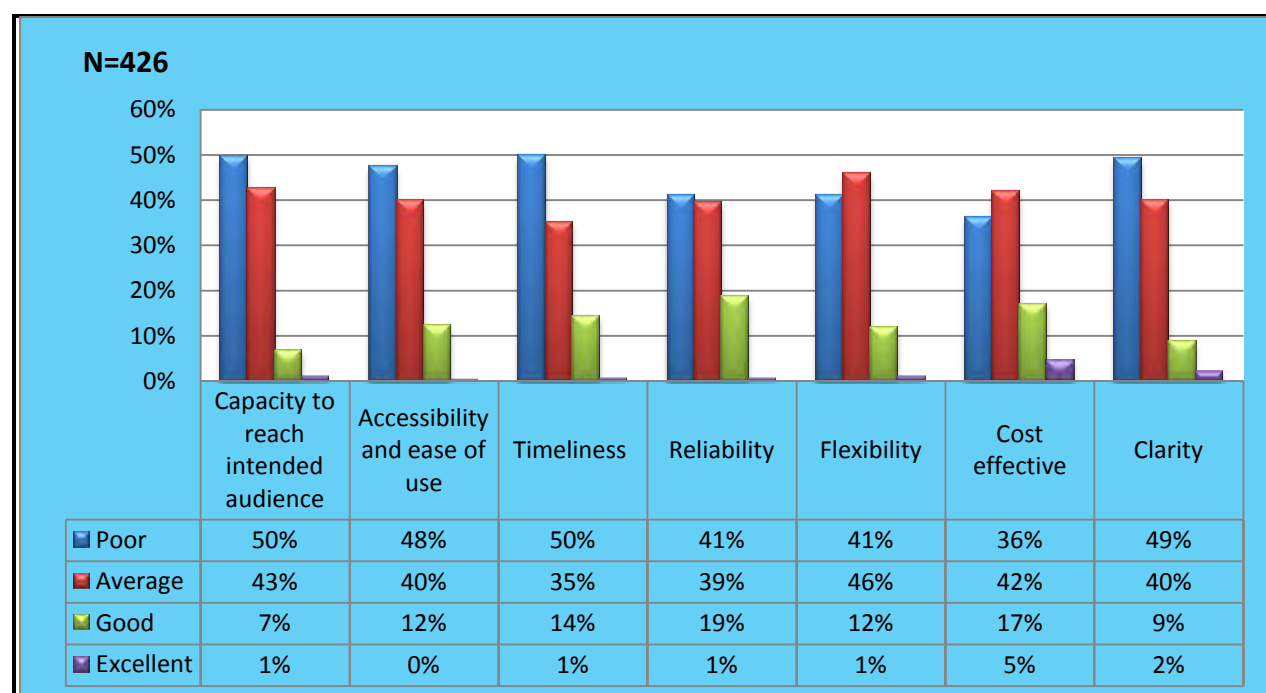


Figure 5.15: Evaluation of Channels and Media

5.4.1.2.5 Human Resources and Infrastructural Assessment

There was a need for a readiness assessment to determine the university's readiness for implementing information based health information dissemination programmes. The study assessed human and infrastructural resources to determine the stage of readiness. The findings revealed that the Student Affairs Department has the capacity to develop and implement information based health information dissemination programmes. However, the Dean of Students was concerned that NUST has not been able to recruit more staff due to financial constraints. She highlighted that there are 'frozen' posts for a qualified Medical Doctor, four Nursing Sisters, two Nurse Aides, and a Pharmacist.

Currently, the Student Counselling Department and the Student Clinic do not have telephone lines and Internet connectivity. However, in spite of the challenges, the Dean of the Students pledged to support infrastructural development, citing that there are already some

developments to improve the information dissemination infrastructure. The Student Affairs Department is currently developing its own website that may be used as one of the platforms for disseminating health information. The Dean of the Students pointed out that they are ready to begin working on a wellness centre that would coordinate all the health information dissemination activities.

5.4.2 Identify Priorities

The third step in developing a needs-based health information dissemination framework involves identifying priorities. The priorities were informed by the study findings. An analysis of data that was gathered from the respondents and literature revealed aspects that need to be prioritised. The Jed Foundation (2011) argues that “Resources are almost always limited and every campus has multiple and competing concerns, so planners must make difficult decisions about which problems to focus on first”. The priorities were grouped into health topics, infrastructural and human resources development, training of students, and development of health promotion policy and integration of health promotion efforts.

5.4.2.1 Health Topics

The data that was gathered from the key stakeholders revealed that the following health topics need to be given priority:

- i. Sexual and reproductive health;
- ii. Physical activity;
- iii. Access to health facilities;
- iv. Emotional health;
- v. Nutrition;
- vi. HIV and AIDS and STI;
- vii. Injury prevention; and,
- viii. Management of chronic diseases

5.4.2.2 Infrastructural Development

An assessment of current resources revealed a gap in infrastructure. This is therefore one of the areas that need urgent attention before the implementation of health information dissemination programmes. The Student Counsellor highlighted the need for telecommunications infrastructure that would link the students' clinic and the Student Affairs Department. The Dean of Students highlighted the need for a website that would be used to disseminate health information to the student population. She also highlighted the need to establish linkages to facilitate networking and resource sharing; the Student Counsellor reiterated the need to develop "an art of working together within the university community to address students' health needs".

5.4.2.3 Human Resource Development

Human capacity building is important in ensuring the success of campus based health intervention programmes (Davenport, 2009). The Dean of Students highlighted that there is a shortage of staff in the Student Affairs division. The findings from the students revealed training gaps on the part of those who are responsible for disseminating health information at NUST. The majority of the students felt that current human resources lack health promotion skills, especially with regard to competence and sensitivity to user concerns (see Figure 5.10). One of the key priorities, therefore, is to recruit more qualified staff and to train current staff in health information dissemination.

5.4.2.4 Training of Students

The World Health Organisation (2009: 4) emphasized that health promotion should "... support personal and social development through providing information ... and enhancing life skills...This has to be facilitated in school, home, work and community settings". The study reveals that students have significant skills gaps, especially in time management, developing meaning of life, participation in community activities, nutritional and weight control, understanding health information, and searching and evaluating health information. These skills gaps therefore need to be given more priority.

5.4.2.5 Policy Formulation

The World Health Organisation (2009: 3) advocates for policy formulation as one of the key health promotion principles. According to WHO, policy formulation facilitates coordination and decision making and ultimately leads to more successful health promotion strategies. The findings in this study revealed an urgent need for a policy for health promotion at NUST. The Student Counsellor and the Dean of Students agreed that the success of health promotion efforts at NUST need the support of sound enabling policies.

5.4.2.6 Integration of Health Promotion Efforts

Current health promotion efforts are fragmented and are therefore not cost effective (Hoffman and Jackson, 2003; Garrard et al., 2004; Jackson et al., 2006). The World Health Organisation (2009: 3) recommended the need for “...diverse but complementary approaches” in health promotion efforts. This point was also supported by the Student Counsellor who said that “It takes a village to raise a child”. Integration and coordination of health information dissemination activities is therefore one of the areas that need priority, in order to improve the effectiveness of health promotion programmes at NUST.

5.4.3 Consult Science, Theory and Practice

The fourth procedure that should be followed when developing a needs-based health information dissemination framework is to consult science, theory and practice of health promotion. The Jed Foundation and Education Development Centre (2011: 13) asserts that health promotion strategies need to be informed by renowned health behaviour theories and best practices. Behaviour change theories were described in detail in Chapter 3, but the data relating to the theories is presented in this section.

The Student Counsellor proposed the need to enforce the theory of Existentialism which is a philosophy that emphasizes individual existence, freedom and choice. She explained that students often have difficulty in coping in life because they fail to adapt to new environments. She highlighted that Existentialism would address what she termed “liberty problems”, whereby students abuse the freedom they get when staying alone, away from their parents.

Berg and Sarvimäki (2003) proposed a holistic-existential approach in developing a theoretical framework for health promotive nursing. However, there are various health promotion theories that have proven to be useful for promoting health at campus. This study confirmed the importance of a number of behaviour change theories. The respondents highlighted that their health is determined by the environment at NUST and where they live, for example, some highlighted that individuals engage in risky behaviours when attempting to address certain socio-economic factors. This is in line with the Social Cognitive Theory which proposes that an individual's behaviour is driven by external factors and not by inner forces.

A suggestion by the Student Counsellor that students need a 'soft landing' when being introduced to health promotion programmes supports the Stages of Change Model which suggests that behaviour change is a staged process. The Diffusion of Innovation Theory was supported when the majority of students accepted the use of emerging web technologies such as social media for receiving health information. The Empowerment Model was supported by the need to impart life skills to students.

The findings of this study indicate that the theories that are being widely used by NUST are the Social Marketing Theory and the Persuasion Model. Social marketing campaigns have been used to raise awareness about a variety of health topics in the campus community. The university regularly engages key stakeholders from the community to address certain health topics. NUST established a resource centre to coordinate these activities. The stakeholders that have been engaged by NUST include the National AIDS Council of Zimbabwe (NAC), Students And Youths Working on Reproductive Health Action Team (SAYWHAT), Population Services International (PSI), Medical Aid Societies, and qualified personnel from the Ministry of Health and Child welfare.

5 4.4 Selecting Interventions and Planning For Evaluation

The fifth stage in developing a health information framework should involve selecting interventions and planning for evaluation. This is whereby researchers select the best forms of health interventions from the evidence that would have been gathered through systematic research. The RAND Corporation (2004: 46) emphasized the need for evidence based practice in selecting and implementing health interventions. The Jed Foundation (2011: 13) proposes that the online Best Practices Registry (BPR) available at <http://www.sprc.org/bpr> administered by the Suicide Prevention Resource Centre (SPRC) and the American Foundation for Suicide Prevention “...is a helpful tool for finding programs, policies, and activities to consider” when selecting interventions for suicide prevention programmes. Although these programmes are biased towards suicide prevention, they provide useful insight on the development of campus based health information dissemination strategies.

The RAND Corporation (2004: 43) identified three major categories of health interventions that may be adopted, depending on particular circumstances:

a. Universal: These programmes are directed at all populations, including those who have not been identified as high risk for substance abuse but for whom exposure to prevention strategies may reduce the possibility of use. Examples include:

- i. Changes in laws or policies that affect everyone in a community; and
- ii. Interventions in schools that include all students or perhaps a particular grade (e.g., 5th grade).

b. Selected: These programmes are directed at groups who face above-average risks for developing substance abuse problems although they may have not yet been identified as having specific problems. Examples include:

- i. Children of alcoholics; and
- ii. Youth who have significant histories of previous substance abuse.

c. Indicated: These programmes are directed at groups who have known risks for developing substance abuse problems. Examples include:

- i. Youth who have been treated but are at high risk for relapse; and

- ii. Youth who have significant levels of risk for use with minimal protective factors in their favour (e.g. influence of a caring adult, positive school performance).

This stage of selecting interventions and planning for evaluation is addressed in detail in Chapter 6 where the researcher develops a framework informed by the data that was gathered in this study from multiple sources. Chapter 6 also deals with implementation and evaluation strategies in detail.

5.4.5 Implementation and Evaluation

The fifth and final step in the development of the health information dissemination framework involves implementation and evaluation of the framework. Commenting on the need for carefully planned implementation, Chinman et al. (2004) argue that “high-quality program implementation is important”. On the need for evaluation, Langford (2006) argues that “to be most effective and useful, the evaluation should be planned as the program is being developed”.

Programme implementation involves all the steps needed to put health promotion strategies and interventions into place and make them available to students. The data that was gathered from students reveal that most students feel that the implementation of an information based health intervention strategy should be implemented with immediate effect. In fact, the highest number of students felt that this is an area that needs urgent attention (see Table 5.10).

The Student Counsellor proposed the idea of “soft landing” during programme implementation. This strategy involves initially providing general health information to students and encouraging them so that they do not get scared to attend health promotion programmes, and then focus on more serious issues later. She argued that discussing serious issues on the very first day may discourage some students. The Dean of Students highlighted the need to continuously monitor the progress of health promotion efforts. A review of literature revealed three types of evaluations for health intervention strategies:

5.4.5.1 Formative Evaluation

Formative evaluations are aimed at strengthening or improving health interventions. They help form them by examining the delivery of the programme, the quality of its implementation, and the assessment of the organisational context, personnel, procedures, and inputs (Health Communication Unit, 2007). According to Trochim (2006) formative evaluation includes several evaluation types:

- i. **Needs assessment** determines who needs the programme, how great the need is, and what might work to meet the need;
- ii. **Evaluability assessment** determines whether an evaluation is feasible and how stakeholders can help shape its usefulness;
- iii. **Structured conceptualization** helps stakeholders define the programme or technology, the target population, and the possible outcomes;
- iv. **Implementation evaluation** monitors the fidelity of the programme or technology delivery; and,
- v. **Process evaluation** investigates the process of delivering the programme or technology, including alternative delivery procedures.

5.4.5.2 Process Evaluation

The Health Communication Unit (2007) at the Centre for Health Promotion, University of Toronto proposes that process evaluation focuses on programmes that are already underway. It examines the procedures and tasks involved in providing a programme. It seeks to answer the question, “What services are actually being delivered and to whom?” According to the Health Communication Unit (2007) process evaluation includes such things as:

- i. Tracking quantity and description of people who are reached by the programme;
- ii. Tracking quantity and types of services provided;
- iii. Descriptions of how services are provided;
- iv. Descriptions of what actually occurs while providing services;
- v. Quality of services provided; and,
- vi. Implementation evaluation.

5.4.5.3 Summative Evaluation

Summative evaluation focuses on programmes that are already underway or completed (Public Health Ontario, 2012). It investigates the effects of the programme, both intended and unintended. It seeks to answer the questions, “Did the programme make a difference?”(Impact evaluation) and “Did the programme meet its stated goals and objectives?”(Outcome evaluation).

The Communication Unit (2007) explains that outcome evaluation assesses both short term outcomes, immediate changes in individuals or participants (such as participation rates, awareness, knowledge, or behaviour) and long term outcomes which look at the larger impacts of a programme on a community. According to the Communication Unit (2007), summative evaluation includes:

- i. Changes in attitudes, knowledge or behaviour;
- ii. Changes in morbidity or mortality rates;
- iii. Number of people participating or served;
- iv. Cost-benefit analysis;
- v. Cost-effectiveness analysis;
- vi. Changes in policies; and,
- vii. Impact assessments.

The Disease Control and Prevention (CDC) (2013) propose a six-step approach to evaluating health interventions. The steps are as follows: Step 1: Engage stakeholders; Step 2: Describe the programme; Step 3: Focus the evaluation design; Step 4: Gather credible evidence; Step 5: Justify conclusions; and, Step 6: Ensure use and share lessons learned. The Health Communication Unit (2007) proposes a broader, ten-step approach towards evaluating health interventions (see Box 5.1).

Box 5.1 Major Steps in Evaluating Health Intervention Programmes

1 Clarify your Program

- Define your program goals, population of interest, and outcome objectives
- Define your programs activities & outputs
- Establish measurable program indicators
- Ensure prerequisites for evaluation are in place

2 Engage Stakeholders

- Understand stakeholders' interests and expectations
- Engage stakeholder participation
- Develop evaluation questions

3 Assess Resources for the Evaluation

- Determine availability of staff and resources
- Determine amount of money allocated for evaluation

4 Design the Evaluation

- Select type of evaluation to be conducted
- Design evaluation framework
- Consider ethical issues and confidentiality

5 Determine Appropriate Methods of Measurement and

- Procedures
- Your evaluation toolbox
- Qualitative versus quantitative methods
- Select your sampling design

6 Develop Work Plan, Budget and Timeline for Evaluation

7 Collect the Data Using Agreed-upon Methods and Procedures

- Pilot test
- Data collection techniques
- Tips for data collection

8 Process and Analyze the Data

- Prepare the data for analysis and Analyze the data

9 Interpret and Disseminate the Results

- Interpret, Present and Share results

10 Take Action

Source: Communication Unit (2007)

This section addressed the third critical research question of the study on the process to be followed in developing and implementing a needs-based framework for disseminating health information to undergraduate students. The study proposes five major steps that include problem description (needs and resource analysis; identifying priorities; consulting science; theory and practice; selecting interventions and planning for evaluation; and, implementing and evaluating interventions. The next section looks at the fourth research question on information dissemination principles that should be drawn in developing and implementing a needs-based information dissemination framework.

5.5 Applicable Health Information Dissemination Principles

One of the key objectives of the study was to determine applicable health information dissemination principles. This section therefore addresses the fourth research question: What information dissemination principles and strategies should be drawn on (and why) in developing and implementing a needs-based framework for disseminating health information to undergraduate students? Development of an information dissemination framework should be informed by applicable information dissemination principles. A preliminary review of literature identified nine key information dissemination principles that can be applied in the development of a health information dissemination framework. There was a need to determine whether the key stakeholders in campus-based health information dissemination are agreeable to these principles and procedures. The majority of students who participated in the study strongly agreed to the proposed principles and procedures. The results of these findings are summarised in Table 5.10.

5.5.1 The Need to Use Synchronous ICTs

The need to use synchronous ICTs for health information dissemination was the most popular information dissemination principle amongst the respondents, with 90% of the students agreeing to it. In fact, none of the students disagreed with this principle, and only 10% remained neutral. The students highlighted a variety of ICTs, including websites and web 2.0 platforms for accessing repackaged health information. This is in line with the results that were highlighted earlier which indicated that the majority of students prefer to receive health information electronically (see Table 5.5). The Dean of Students lamented the lack of ICT infrastructure as one of the antithetical factors hampering the success of health promotion strategies at NUST.

5.5.2 Health Promotion Strategies Should Be Prevention-focused

The majority of the respondents 383 (89%) generally agreed with the notion that campus based health information dissemination programmes should focus on disease prevention. Only a few 11 (7%) disagreed, while 56 (13%) remained neutral. This principle was supported by the Dean of Students and the Student Counsellor. The Nursing Sister suggested that NUST should introduce sessions for preventive care, at least one session per week.

5.5.3 Formulate a Policy

A preliminary investigation of literature indicated that health promotion programmes should be supported by viable policies. Unfortunately NUST has not yet devised a health promotion policy. However, the need for a policy was resoundingly supported by both students and staff. A large majority of students 381 (88%) agreed to a need for a health information dissemination policy and only 11 (3%) disagreed, and 36 (9%) remained neutral.

5.5.4 Disseminate a Variety of Health Topics

The findings that were presented earlier on the health topics preferred by students (see Table 5.3) reveals that students need information on a variety of health topics. This principle was also supported by the Dean of Students, Student Counsellor, and the Nursing Sister. When the students were asked about whether NUST should disseminate health information in a variety of topics, the 364 (87%) of them agreed to this principle, and only 13 (3%) disagreed.

5.5.5 Health Information Dissemination System Should Be Integrated

The Salutogenetic perspective of health rejects the traditional medical dichotomy that separates health from illness. A review of literature suggests that universities need to integrate health promotion efforts because health is influenced by an interplay of related factors. There was a need to know what the Dean of Students, Student Counsellor, Nursing Sister and the students felt about this principle. The majority of students 360 (84%) agreed with this principle, and none of them disagreed.

Commenting on the need for collaborative efforts in addressing students' health problems, the Student Counsellor said that "It takes a village to raise a child". The Nursing Sister suggested that "There is need for expansion of services for holistic care of students". These sentiments reveal that the need for an integrated health information dissemination strategy is profoundly supported at NUST.

5.5.6 The Need to Consult Students in the Development Process (Two-way Dissemination)

The success of any system is determined by its acceptance by the users. Users therefore are key stakeholders in the development and implementation of health information dissemination systems. User involvement was therefore one of the key health information dissemination principles that was studied. The majority of students 360 (84%) agreed that they should be consulted during the development and implementation of specific health promotion programmes, and only 21 (5%) disagreed.

The Student Counsellor suggested the need for respecting students when it comes to issues pertaining to their health. The Nursing Sister revealed that students seem to be comfortable with the feedback sessions. Both the Student Affairs section and the Student Clinic have used text messages, and cell phones to gather and solicit feedback from students. Both the Nursing Sister and Student Counsellor suggested that there is need for follow-up on the orientation service to determine whether it is successful. The students felt they can utilise social media platforms to provide feedback on health promotion activities.

5.5.7 Development of Students' Life Skills

The theory of Salutogenesis that was developed by Antonovsky (1987) and advanced by Lindström (2010) argues that health promotion efforts should not only build bridges for individuals to cross but that individuals should be taught how swim in the 'river of life'. These authors argue that individuals should possess life skills to enable them to achieve wellness. As such, health promotion efforts should focus on promoting life skills. The findings that were presented earlier (see Section 5.3.3) indicate significant gaps in certain life skills. Therefore the success of health promotion programmed is dependent upon certain critical life skills such as the ability to search and evaluate health information.

The findings reveal that most students (82%) agreed to the principle of developing critical life skills, 17 (4%) disagreed and 16 (14%) were neutral. The Student Counsellor emphasized the need to develop students' life skills. She suggested that lecturers should be role models and

should teach important life skills such as time management, study skills, critical thinking, community participation, and information literacy, among other skills.

5.5.8 Use a Variety of Information Dissemination Methods

Different dissemination channels and products are needed for different users. The data on information dissemination sources, channels and media (see Table 5.6 and Figure 5.11) reveal that students have different preferences in terms of the sources, media and channels used in assessing and receiving health information. Thus, health information should be packaged to fit the needs of the intended audience. This principle was supported by the majority of the students 334 (78%). Students who participated in the study highlighted a plethora of information dissemination methods that include websites, workshops, social media, lectures, and printouts (see Section 5.3.5).

5.5.9 Use Persuasion Techniques

The success of health information dissemination programmes is influenced by a number of factors. The theoretical framework of the study (Chapter 3) highlighted three dominant information dissemination theories (see Figure 3.2) that should inform the design of successful health information dissemination programmes. At the core of these theories is the theory of Salutogenesis which takes a broader view of health and emphasizes skill development and integration of health promotion activities.

The success of health information dissemination programmes is also influenced by information dissemination and persuasion techniques. The findings derived from focus group discussions reveal that students do not only prefer certain sources, channels and formats but behaviour change is influenced by various other factors. During focus group discussions, students highlighted that role models should be used so that they could feel inspired. The Student Counsellor interposed that messages that are too formal do not appeal to students and students are less likely to attend to health promotion programmes that use formal education techniques. The Nursing Sister emphasized the need to use marketing techniques to make student services not only visible, but also attractive. The persuasion techniques that were highlighted during the focus group discussions include dramas, shows, comedies, and games.

Table 5.10: Health Information Dissemination Principles and Procedures

Principle N=426	Strongly disagree %	Disagree %	Neutral %	Agree %	Strongly agree %
Prevention-focused dissemination	4.7	2.6	13.1	32.2	56.3
Two-way dissemination	5.2	3.5	9.6	31	50.7
Consult students	0.5	4.9	10.6	35.2	48.8
Variety of dissemination methods	3.5	2.1	16.2	30.8	47.4
Variety of health topics	3.1	0	9.9	27.9	59.2
Integrated dissemination system	0	0.2	16	37.8	46
Development of students' life skills	0.5	4	14.3	23	58.2
Formulate a policy	0	2.6	8.5	40.8	48.1
Synchronise ICTs	0	0	9.6	32.4	58
Immediate implementation	0.2	0	8.9	28.9	62

This section looked at applicable information dissemination principles which should inform the design of information dissemination frameworks. The proposed information dissemination framework was influenced by the needs of the users, and applicable information dissemination principles proposed by students, and relevant members of NUST staff participating in the study. The principles were in line with the suggestions drawn from authoritative sources in health information dissemination. The next section summarises the major findings of the study in line with the research questions.

5.6 Summary

The findings presented in this chapter are instrumental in the development of a needs-based information dissemination framework. The key stakeholders in the development process made important contributions regarding the formulation of a coherent framework that is presented in Chapter 6 (Interpretation and discussion). This section summarises the key findings that relate to the apriori codes, which are codes that were developed prior to the examination of data (Bendassolli, 2013). These codes were informed by the generalised integrated theoretical framework that was described in Chapter 3. The key themes include health information sources, channels, topics, health literacy skills, life skills, procedures in developing an information dissemination framework, and applicable information dissemination principles.

Emergent codes or the so called ‘empirical codes’ (Bendassolli, 2013) are presented in Chapter 6. These codes were informed by the research findings and they were amalgamated with relevant literature in the development of the health information dissemination framework. As a result, the empirical codes are broader and more coherent than the apriori codes. The following is a summary on the predefined apriori codes. The codes were largely presented in line with the research questions.

5.6.1 Health Information Needs

The majority of undergraduate students described their health as excellent. There was no statistically significant dependence between general health description and other variables such as gender, faculty, and age. Health information needs were categorised into health topics, sources, channels, and critical life skills. A summary of the findings in these areas is presented in this section.

5.6.1.1 Critical Life Skills

The findings reveal that the majority of students considered themselves as having average problem solving skills. Most of them thought they were good at identifying and solving

problems, assessing and analysing information and resolving conflicts, excellent in goal setting and they scored poorest on time management.

On identity development, the majority indicated that they are good in all areas, especially on maintaining self esteem. On the negative side, a significant number of students thought they have problems in developing meaning of life. In terms of interpersonal communication, the students also thought they had good skills. However, they scored poorly on participation in community activities.

The students indicated that they have good skills on health maintenance. However, a significant number of them indicated that they have problems with nutritional and weight control. Regarding their health information literacy, the majority thought they were average, especially in understanding health information. It was not encouraging to note that a very significant number of students thought they are poor in searching and evaluating health information.

5.6.1.2 Health Topics

The data that was gathered from the Student Affairs Department reveal that NUST is disseminating information on a variety of health topics. The topics that were cited include sexual and reproductive health, HIV and AIDS, STIs, hygiene, depression and anxiety, nutrition, physical activity, and relationships.

The students indicated that they require health information on a wide range of topics. The topics which were most cited are physical activity, nutrition, access to health facilities, HIV and AIDS and STI prevention, and how to help others in distress. Other topics of interest are: managing chronic diseases, natural remedies, access to medical insurance cover, relationship difficulties, depression and anxiety, injury prevention, accommodation and sexual assault.

An analysis of the data revealed significant gaps between the information that is being disseminated and the information that is preferred by the students. The results show that the scope of health topics that are being disseminated by NUST is narrower than those preferred by students. The data also revealed a significant statistical relationship between gender and choice of health topics. The results show that more females than males need information on depression and anxiety, grief and loss, how to help others in distress, nutrition, pregnancy prevention, relationship difficulty, sexual assault, and violence prevention. More males than females were interested in receiving information on HIV and AIDS, alcohol and drug abuse, and physical activity.

The students were asked to evaluate the health information content in terms of its accuracy, comprehensiveness, relevance, simplicity, and cost effectiveness. It was interesting to note that a significant number of respondents regarded the content as ‘poor’ in terms of its accuracy. The majority of the respondents perceived the content as ‘average’ in comprehensiveness, relevance, simplicity, and cost effectiveness.

5.6.1.3 Information Sources

The results indicate that NUST has a number of health information sources from where students can gather health information. The sources include the Student Counselling Department, departmental counselling services, the Nursing Sister, printouts (mainly posters, and flyers), workshops, and peer educators and community health educators to disseminate health information. NUST is also actively working with other key stakeholders from the health sector in disseminating health information at campus.

However, the results indicate that generally, the students prefer to consult the Nursing Sister for their health information needs followed by peers and community health educators. The least preferred source was teaching staff. Other students preferred their personal doctors and the Internet.

The students were asked to evaluate the sources of information in terms of their accessibility, trustworthiness, competence, experience, and sensitivity to user concerns. The results indicate that the majority of respondents regard the health information sources as ‘poor’ in terms of accessibility and sensitivity to user concerns, and ‘average’ in terms of trustworthiness, competence and experience. The students also complained that the information sources were not visible within the university campus.

5.6.1.4 Dissemination Channels and Media

The findings reveal that the majority of students prefer to receive health information electronically. The cell phone was cited as the most preferred method for receiving health information and followed by workshops. However, doing health related courses and printouts were the least preferred methods for receiving health information. Other channels that were cited include seminars, social media applications, conferences and comedy shows.

An analysis of the results indicate that the majority of respondents view the health information dissemination media and channels at NUST as ‘poor’ in accessibility, capacity to reach intended audience, timeliness, reliability, and attractiveness of the information ‘package’. The students felt that the channels are not interactive enough and there were problems with Internet connectivity.

5.6.2 Procedures in Developing and Implementing an Information Dissemination Framework

The development of an information dissemination framework follows carefully planned and deliberate procedures. The procedures were informed by the research findings and revelations from the literature. The procedures that were followed in this study were influenced by the Jed Foundation and were supported by Power and Hunter (2001), the RAND Corporation (2004), Leurs et al. (2005), and Edwards et al. (2008). This study proposes a five step approach to developing and implementing a needs-based health information dissemination framework.

- i. Problem description (Needs and resource analysis);
- ii. Identify priorities;

- iii. Consult science, theory and practice;
- iv. Select interventions and plan for evaluation; and,
- v. Implement and evaluate interventions.

5.6.3 Applicable Information Dissemination Principles

The findings reveal that the most popular information dissemination principles are:

- i. A system for disseminating health information should be implemented immediately (91%);
- ii. The information dissemination system should use and synchronise different Information and Communication Technologies (ICTs) for easier access to health information (90%);
- iii. Health information dissemination at NUST should be prevention-focused so that students can prevent diseases (89%);
- iv. NUST should formulate a policy for effective dissemination of health information to student (89%);
- v. NUST should disseminate a variety of health topics to students, instead of isolated topics such as HIV and AIDS (87%);
- vi. The health information dissemination system should be integrated, instead of isolated programmes targeting specific diseases (84%);
- vii. Students should be consulted and involved during the development and implementation of health information dissemination systems at NUST (84%); and,
- viii. NUST should focus its health information dissemination efforts towards the development of students' life skills so that students can be in control of their health (82%).

However, the literature also suggests that there is need to use a variety of information dissemination methods and the success of health information dissemination programmes is also influenced by certain persuasion techniques such as the use of role models and marketing techniques.

The next chapter consists of a full discussion, interpretation and evaluation of the findings with reference to reviewed literature. It also includes theory building, that is, the development of the health information dissemination framework.

CHAPTER 6

INTERPRETATION AND DISCUSSION

6.1 Introduction

As elucidated in Chapter 4, this study is based on Constructivist Grounded Theory which proposes the creation and discovery of a shared reality and co-construction of data. Collis and Hussey (2003) call this an inductive/deductive approach, whereby the development of theory is guided by continual reference to the data. Suddaby (2006) argues for the need to constantly refer to literature when developing theory. He argues that “...the seamless craft of a well-executed grounded theory study... is the product of considerable experience, hard work, [and] creativity” (Suddaby, 2006: 640). The researcher therefore used data, and literature to “...stitch up the various threads of the investigation into a cohesive narrative” (Tichapondwa, 2013: 243). This chapter deals with the interpretation of the findings in the context of previous researches with the objective of crafting a seamless and robust theoretical framework. The chapter also explains in detail how the different mechanisms of the proposed theory work and fit together. The framework is influenced by the needs of the participants, the researcher, and the literature. The emergent codes or the so called ‘empirical codes’ were developed from the data and used to develop the information dissemination framework. The chapter is organised into two main sections; the first sections deals with the interpretation and discussion of the findings and the second section deals with presenting the information dissemination framework.

6.2 Interpretation and Discussion of Findings

A discussion is concerned with tying together findings in relation to theory and review of literature; it is concerned with claiming new information, corroborating existing literature, clarifying what is already known and contradicting what is already known (Oso and Onen, 2008; Schafer, 2014). This section is concerned with interpreting and discussing the findings of the study. The interpretation and discussion is centred on health information needs of

students. An attempt is made to incorporate applicable information dissemination principles and procedures in the discussion.

The findings reveal that the majority of students at NUST mainly need information on a variety of health topics, most preferably on sexual and reproductive health, physical activity, access to health facilities, emotional health, and nutrition, HIV and AIDS, STIs, injury prevention and relationship difficulties (see Table 5.2). Most students preferred to receive health information electronically, followed by video and print. Cell phones, workshops, social networking sites were the most preferred channels (see Tables 5.5, 5.6, and 5.7). Their most preferred source is the Nursing Sister and the least preferred is teaching staff. Possible reasons for these trends are highlighted in the following discussion.

Undergraduate students have average health information literacy. They scored highest on understanding health information and lowest on searching and evaluating health information. The findings (see Table 5.10) revealed that NUST should disseminate a variety of health topics, using synchronous ICTs. Dissemination efforts should focus on disease prevention, by developing life skills. Persuasion techniques would be pivotal for behaviour change. There should be a viable policy for the integration and coordination of health information dissemination activities. The development of health information dissemination frameworks should be guided by the dissemination principles highlighted earlier and should follow carefully planned steps, starting with a needs analysis through to evaluation of the programme.

6.2.1 Health Information Needs of Undergraduate Students

The first objective of the study was to determine the health information needs of undergraduate students. This section therefore discusses and interprets the findings relating to student's health information needs. The findings are tied up with the data gathered from other sections, especially from information dissemination principles and procedures. This was done to come up with a more coherent argument. The data presented in Chapter 5 is diverse but interrelated. An attempt was therefore made to tie up the different strands of data into the

apriori codes highlighted in the proposed integrated theoretical framework (discussed in detail in Chapter 3). The codes were merged with the codes discovered in the data, the so called empirical codes. Therefore the main codes that are discussed in this section are: Content, Source, Media and Channels, and Skills, Information dissemination principles, Procedures in developing the framework, and Persuasion techniques. It is also important to note that these codes also informed the broad definition of health information needs proposed in Chapter 2.

Understanding health information needs is a prerequisite for developing a needs-based health information dissemination framework. However, Marcella, Baxter and Moore (2002) underscored the dearth of formalised models and frameworks for understanding health information needs in the literature. The concept of health information needs has been looked at from a narrow perspective. Davies et al. (2000); Case (2002); Kitzrow (2003); Timmins (2006) and, Braun et al. (2007) viewed health information needs in the context of ‘health concerns’ or simply ‘health topics’ of interest to individuals. Researchers tended to treat an information need as the gap between what we know and what we need to know, or as an anomalous state of knowledge.

This view of health information needs is not effective because health information needs are broader, including information competencies and unrecognised health information needs. As elucidated in the literature review chapter, this study gathered insight from research in both the field of Library and Information Science and Health Sciences to come up with a comprehensive definition of health information needs. The proposed definition of health information needs is ‘an individual’s recognised or unrecognised knowledge and skills gap in health information seeking which can be actively or passively met, within a particular context, situation and time, using appropriate resources and skills’. The definition includes four major dimensions of information needs that include health topics (content), sources, channels and media, and skills.

6.2.1.1 Content

The study investigated the health topics that are needed by university students. The findings reveal that university students need health information on a variety of topics. These findings corroborate the argument that health is influenced by a wide variety of factors and as such, individuals should have access to a variety of health information. Several previous studies reveal that students seek health information on a variety of topics to make decisions on health related matters (Nwezeh, 2008; Bandason and Rusakaniko, 2010; Kicklighter et al., 2010; Anasi and Nwalo, 2012; Downs and Eisenberg, 2012; Ayres, Mahat and Atkins, 2013; Conley, Travers and Bryant, 2013).

The findings in this study reveal that a significant number of university students need information on contemporary health problems, mainly on sexual and reproductive health, HIV and AIDS, STIs. This could be attributed to the health challenges affecting university students today. This supports the findings in study carried out by Terry, Masvaure and Gavin (2005) on HIV and AIDS literacy in Zimbabwe which concluded that students need health information on specific health problems that include HIV infection and other sexually transmitted infections. Similar results were also obtained in a study that was carried out by Nwezeh (2008) at the Obafemi Awolowo University in Nigeria and which indicated that most of the respondents (90%) required information on reproductive health issues such as unwanted pregnancies, sexually transmitted infections, use of contraceptives and relationships.

Although this study concurs with previous studies that students mainly need information on certain health matters, there are significant disparities in terms of health topics preferred in different settings. Studies that have been conducted in the developed world have stressed the need to provide information on emotional health and stress reduction (Stock, Wille and Krämer, 2001; Alvi et al., 2010; Jadoon et al., 2010; Sieben, 2011; Repak, 2013; Conley, Travers and Bryant, 2013). However, this study and others that have been carried out in Zimbabwe highlight that more information is needed on specific health problems, especially on HIV and AIDS, STIs and other sexual and reproductive health matters. This disparity may be a result of the fact that student health services in the developed world are now well established and they have dealt with specific diseases such as HIV and AIDS and STIs, and

therefore focus is now more on emotional health. While emotional health is an issue among university students in Zimbabwe, this issue has not been given priority due to other pressing health matters that require immediate attention.

There are startling similarities between the findings of this study and the results obtained by Nwezeh (2008) in Nigeria. This study revealed that 78% of students indicated they need information on stress reduction, similarly, Nwezeh's (2008) study revealed 76% of the students wanted information of emotional health. This trend may be attributed to similar socio-economic and educational factors affecting Zimbabwe and Nigeria.

This study provides further support for the choice of health topics according to gender (see Table 5.3). The study reveals that more females than males prefer information on nutrition. This means that females encounter more challenges on nutritional aspects than males. Similarly, a study that was carried out by Stock, Wille and Krämer (2001) revealed that requests for information on healthy nutrition as well as on eating disorders were higher with female than with male students. Another similarity relates to male students. This study reveals that more male students need information on alcohol and drug abuse than their female counterparts. A similar result was obtained in a study by Davies et al. (2000) which showed that alcohol and drug abuse is a favourite topic among male students. This result provides evidence that females need more information of nutrition and related issues while male students need more information on alcohol and other drug related health problems.

A report by Savadye (2011) reveals that female students are more vulnerable than males with health risks related to HIV and AIDS. However, it was interesting to note that in this study, more males than females had interest on information on HIV and AIDS. A possible explanation may be the success of health promotion programmes in Zimbabwe which have targeted the girl child. Health promotion programmes in Zimbabwe, from primary education through to tertiary education have deliberately targeted females due to their vulnerability in society. Projects such as the Musasa Project are biased towards the health information needs of women (United Nations Population Fund, 2011).

The study revealed a significant gap between the topics needed by the students and the topics that are being disseminated by NUST (see Table 5.8). More than half of the population (53.1%) indicated that they had not received any health information from NUST. Moreover, the students commented that NUST is disseminating information on a limited number of health topics. This means that NUST is not disseminating enough health information to students. An analysis of data further revealed that the gaps were most prevalent on how to help others in distress, physical activity, stress reduction, nutrition, and management of chronic illnesses. This supports earlier findings by Brener and Gowda (2001: 223) which found that only 6% of American college students reported that they received health information on the topics that they needed. Similarly a later American study by Kwan et al. (2010:555) revealed that “nearly half (46%) of the sample reported not receiving any information, whereas only 0.5% received information on all health topics”.

The findings of this study reveal that, to a large extent, the information dissemination practices at NUST are not in line with some of the key health information dissemination principles(see Table 5.8). The gaps in the topics being disseminated imply that NUST is not effectively addressing student health concerns. The theory of Salutogenesis argues that health is influenced by a wide range of factors. Therefore, disseminating isolated health topics to students is not an effective measure in trying to achieve student wellbeing. Harmsworth, Turpin and TQEF National Co-ordination Team (2000) argue that institutions should disseminate a variety of health topics to cater for the myriad health information needs of students.

One of the key information dissemination principles states that health promotion efforts should focus on disease prevention, and should not be reactive to specific diseases. The Jed Foundation and Education Development Centre (2011:3) recommended that health information dissemination programmes should be prevention-focused in addition to being response-focused. However, the findings of this study reveal that most of the health topics that are being disseminated by NUST relate to specific health problems. There are significant gaps on topics such as how to help others in distress, physical activity stress reduction, and

nutrition. This means that the health promotion strategy at NUST is not giving emphasis to disease prevention.

6.2.1.2 Sources

This study incorporated the concept of information sources as an important dimension in defining health information needs. Therefore, health information sources were investigated and evaluated. This approach supports an argument made by Nwezeh (2008), who incorporated the dimension of information sources when assessing health information needs of students in Nigeria.

NUST is using a variety of information sources. The findings from the study indicate that NUST mainly uses the Student Counselling Department, departmental counselling services, the Nursing Sister, and peer educators and community health educators as sources of health information (see Figure 5.12). NUST is doing well in this area because there are a number of health information sources to consult. The findings support the information dissemination principle which asserts that health information dissemination strategies should use “...diverse but complementary approaches” (World Health Organisation, 2009: 3).

The study revealed the most preferred sources for health information are the Nursing Sister, peer educators and community health educators. This means that the majority of students prefer to consult qualified health professionals for their information needs. However, this trend is somewhat different from what has been revealed by the literature. Several studies have highlighted the importance of the counselling services in addressing students’ health needs (Davenport 2009; Misch, 2009). A study that was carried out by Gallagher (2008: 14) in 2008 reported a significant increase in the number of student using counselling services. The American College Health Association (2010: 583) interposes that “student counselling services have been pivotal in providing counselling to students on a variety of health topics”. The reason why the counselling service at NUST is not popular with students is due to invisibility. The data that was obtained from the study shows that the majority of the students could not locate the student counselling services.

This study supports previous studies on community health educators as important sources of health information. The findings reveal that both staff and students have confidence in community health educators. NUST has engaged a number of health educators in trying to address students' health information needs. This supports a study that was carried out by Shive and Morris (2006) which evaluated a social marketing campaign done at two California community colleges in collaboration with industry and public health organisations. The study found out that the campaign by the community health educators significantly increased fruit intake by college students (Shive and Morris, 2006: 34).

The NUST study revealed that the least preferred source of health information by university students at NUST are the teaching staff (see Table 5.4). However, the students highlighted that teaching staff can be consulted on less serious health matters. The Student Counsellor at NUST also believes that teaching staff are important in supporting health promotion efforts at NUST by providing information related to academic pressures, and the general wellbeing of students. This supports a study conducted by the Ohio State University Counselling and Consultation Service (2013) which reported that students perceive faculty staff as individuals who can lend a helping hand or who can listen to their problems. According to the Ohio State University Counselling and Consultation Service (2013) "Faculty members are expected to express interest and concern in helping struggling students before it is too late to save their lives... identifying problems that include behaviour posing a threat to the student, [and] suicidal tendencies...". Perhaps the reason why teaching staff, in this study, were the least preferred is probably because of their inability to tackle complex health problems which should be referred to qualified health professionals.

It was interesting to note that students at NUST perceived peer educators as an important source of health information (see Table 5.4). NUST recently introduced a peer education programme as a way of boosting access to health information at campus. The findings support a study by White et al. (2009: 497) which cites that peer health education is effective because peer health educators are more accessible than university administrators and health

professionals. Moreover, personal relationships allow peer health educators to closely identify and empathize with the experiences of their student counterparts (Milburn, 1995).

These observations from the NUST study are also in line with a study that was carried out by Boyle et al. (2011: 520) which revealed that peer educators boosted the self-efficacy of students by enabling performance attainments, providing vicarious experience, and delivering verbal persuasion. The study by Boyle et al. (2011) also confirms that peer education programmes are one of the most effective methods of instilling behaviour change amongst college students.

Results from this study reveal that university students prefer to receive health information electronically (see Table 5.5). This means that the traditional methods that are being used to disseminate health information at NUST are less effective in addressing students' health information needs. The results on information dissemination media contradict the findings in the literature which show that most universities have dedicated websites or homepages for health information dissemination. The National Alliance on Mental Illness (2012: 10) conducted a national survey of college students in the United States of America in order to better understand how students become aware of resources available to them on campus. Survey respondents most often cited their college's website as their primary source of health information. Hence the NUST study supports the findings obtained in several studies which demonstrated the effectiveness of websites in disseminating health information in universities (Bingham et al., 2010; Hartjes and Baumann, 2012; Radhu et al., 2012). A possible reason why there is perhaps a difference with the use of websites between this study and others cited, may be that the concept of health promotion at NUST is fairly new and therefore there is lack of comprehensive health promotion programmes.

The NUST website was one of the least popular sources of health information. The students felt that the NUST website rarely disseminates health information and that the website was not interactive. This view supports an observation that was made in a study carried out by Obermayer et al. (2004: 76) which found that most students revealed that they failed to

participate in a website-based health intervention programme because the website was not accessible and also less interactive.

This particular study evaluated the information sources at NUST to determine their effectiveness in addressing students' health information needs. The findings reveal that the most trusted sources are qualified health professionals, community health educators, and peers. These results reveal a striking resemblance to the results of a study that was carried out by Kwan et al. (2010) at St. George campus at the University of Toronto, Canada. The study found that the most believable sources of health-related information were health centre medical staff (92%), and health educators (90%). A later study by Zullig, Reger-Nash and Valois (2012) also found that the qualifications of the information providers influenced the choice of health information sources.

The results of this study indicate that the majority of respondents regard the health information sources at NUST as poor in terms of accessibility (see Figure 5.15). This means that the availability of information sources is not enough in addressing health needs of students if they are not visible. There should be mechanisms for making the health sources accessible. The results support findings of a study that was carried out by El Kahi et al. (2012) which revealed that most university students in Lebanon fail to utilize health facilities because of lack of awareness.

A close look at the findings reveal that NUST is using a variety of behaviour change theories but the most dominant one is the Social Marketing Theory. NUST has collaborated with key stakeholders from the community in addressing a number of health topics. This means that the institution is on the right path in consulting the theory and practice of health promotion. Studies by Maibach, Rothschild and Novelli (2002: 439) and Shive and Morris (2006: 34) have demonstrated the positive impact of Social Marketing campaigns in addressing students' health information needs.

NUST has established a resource centre to coordinate its social marketing campaigns. The Student Counsellor felt that the establishment of the resource centre is an important step towards the utilisation and collaboration of health information dissemination efforts. By stating “It takes a village to raise a child”, the Student Counsellor was advocating for an integrated health information strategy. This supports previous studies which revealed that fragmented health information promotion efforts are not cost effective in addressing students’ health needs (Hoffman and Jackson, 2003; Garrard et al., 2004; Jackson et al., 2006).

The findings of this study also point to a need for a policy for the smooth coordination of health promotion activities (see Table 5.10). Currently, NUST does not have any health promotion policy, meaning that there could be duplication of effort and wastage of resources. Moreover, without a policy, it would be difficult to measure the success or failure of existing health promotion programmes. The National Centre for the Dissemination of Disability Research (2001: 3-4) in the United States of America argues that an information dissemination policy is an important tool in ensuring ultimate utilisation of health information in different settings.

6.2.1.3 Channels and Media

The study investigated and evaluated the channels and media that are used to disseminate health information to students at NUST. The findings reveal that NUST uses a variety of channels and media to disseminate health information to students. The channels include cell phones, printouts, flyers, and face-to-face encounters through peer education programmes, workshops and a regular orientation programme. This is in line with the information dissemination principle that health programmes should use a variety of information dissemination methods (Harmsworth, Turpin and TQEF National Co-ordination Team, 2000). NUST therefore is doing well in using multiple dissemination methods. A study by Hoffman and Jackson (2003) found that interventions that were shown to be effective at reducing tobacco use, increasing physical activity, preventing cardiovascular disease and increasing food security involved a combination of health promotion strategies occurring at the personal, community and structural levels.

The findings of this study show that students prefer to receive health information electronically and through videos. Printouts and audio were the least preferred methods for receiving health information. An analysis of data on the channels and media used by NUST to disseminate health information showed that cell phones were the most preferred method for receiving health information, followed by workshops. The students cited the Short Message Service (SMS) as a cheap and convenient means for receiving urgent health information and for sending queries. The results support an observation that was made in a study carried out by Obermayer et al. (2004: 76) where it was found that most students preferred cell phone text messaging to the university website in receiving and accessing health information. The students cited that the SMS does not require Internet access. The reason why NUST students preferred cell phone text messaging to the NUST website is probably because NUST has problems with its Internet connectivity. The bandwidth at NUST is low and the Wireless Fidelity (WIFI) service cannot cater for an increasing number of university students. Moreover the coverage of the NUST WIFI is still poor due to a shortage of telecommunications infrastructure.

A review of literature did not come up with a conclusive argument on the choice of media. A study that was done by Cline and Engel (1991) showed that print media such as leaflets were the only kinds of media sources that the respondents rated high on both believability and likelihood of use. A possible reason for the lack of consensus in the battle between print and electronic media may be that each tool is useful and convenient for a particular purpose. SMS, for example, is more appropriate for short messages and it would not be effective for disseminating lengthy health messages. Printouts and notice boards would be cost effective in settings with poor Internet connectivity such as at NUST.

Problems with Internet connectivity could be the reason why printouts are the most commonly used media for disseminating health information at NUST, followed by face-to-face interactions. The Jed Foundation (2011: 19) also observed that many campuses are using brochures and posters to address specific health problems. The Foundation argues that these traditional means of communicating health information are cost effective. Posters have been successfully used by the University of Wisconsin-Oshkosh to increase student help-seeking (The Jed Foundation, 2011: 19).

Printouts can be an effective tool in addressing health problems that are recurrent in nature. Smoking, for example, is a health problem which needs time to be addressed. Printouts such as posters are more permanent and therefore would be more effective in addressing this problem because the posters keep on reminding an individual about the dangers of smoking. The Arkansas Clean Air on Campus Act (2009: 16) reports that campus signage was successfully used to raise awareness of the tobacco-free policy within the state. Marshall and Stylianou (2010: 51) also argued that notice boards are an excellent way to promote health around the campus. They also cited an example of using notice boards in promoting tobacco cessation.

The findings in this study reveal that health related courses was one of the least preferred channels for health information dissemination. This is in stark contrast to a study that was carried out by Kicklighter et.al (2010: 98) at Georgia State University in Atlanta, Georgia. The findings demonstrated the effectiveness of a health promotion module. The findings in the study showed that “... many students gained new nutrition information and found the module worthwhile... Students desired information that could be integrated into a college student’s lifestyle”. One possible explanation of this disparity is that NUST does not have any health related courses and it is likely that the students who participated in the study have not done any health related course aimed at promoting health. Students tend to have negative perceptions towards health promotion programmes that are too formal; the module at Georgia State University in Atlanta, Georgia was more interactive and therefore interesting. It included PowerPoint presentations, a nutrition survivor game and was based on a popular television show (Kicklighter et al, 2010: 99). It is therefore possible that students at NUST did not perceive or imagine a more interesting and interactive module when they responded to the question. In hindsight, it becomes evident that perhaps during the focus group discussions with NUST students, there should have been a demonstration and more clarity on health education programmes.

Doherty and Low (2008) and Lambert (2001) found that educational interventions enhance knowledge and utilisation of students’ health services. Cardinal, Jacques and Levy (2002:

118) declare that there is evidence that well-taught fitness and wellness classes have the potential to positively affect the attitudes and behaviours of the students that enrol in them. This idea is also supported by Kulinna et al. (2009: 128) who argue that fitness and wellness courses have been seen as agents of change for modifying unhealthy lifestyles among college students. However, NUST is still lagging behind on educational interventions and therefore students are missing out on one of the most effective interventions.

However, Svenson, Carmel and Varnhagen (1997: 65) report that “...evaluations of AIDS-related educational programmes for university students are often not very encouraging”. Baldwin, Whiteley and Baldwin (1990), found that taking a university education course did not affect students’ sexual behaviour. Ehrhardt, Yingling and Warne (1991) reported that health promotion programmes in universities have been unable to reach their full potential in helping young people in universities because health providers have tended to issue “commandments”. This shows that the success of health education programmes depends on their nature in terms of content, planning and implementation. These findings show that universities need to carefully plan and implement their health promotion programmes if they are to be successful. The Department of Health (2004) of the United Kingdom argues that health information should not sound ‘preachy’, and boring.

Workshops, in this study, proved to be a popular platform for receiving health information. Both staff and students supported workshops and other forms of formal discussions. The findings reveal that workshops are cost effective and interactive. This means that students prefer health promotion programmes which are more interactive, where they can also participate. This is in support of efforts by the University of California Berkeley (2013) which regularly presents workshops as a way of promoting health amongst students. The presentation styles include personal testimonials, lectures, group discussion and interactive exercises. The workshops and presentations are available on a wide variety of health topics, including safer sex and sexual health, stress management, preventing sexual assault, intimate partner violence, and sexual harassment, among other health topics. The Duke Student Wellness Centre (2013) in the United States of America also runs regular workshops on a variety of health topics that would have been adapted to meet the needs of student groups.

The use of social media applications was received with mixed feelings by the students during the focus group discussions. Some students felt that these tools compromise the authenticity and seriousness of health information, while others thought that the tools can be useful for sharing health information amongst peers. The idea of information sharing through social media supports an argument by Thackeray et al. (2008: 340) who purports that social media tools (e.g Facebook and blogs) allow students to share their experiences, thereby making information dissemination programmes cost effective. However, the main danger according to Kortum, Edwards and Richards-Kortum (2008) lies in the participatory nature of social media, which entails an open forum for information exchange. This increases the possibility of wide dissemination of non-credible, and potentially erroneous, health information.

The inconclusive nature of literature relating to the use of Web 2.0 applications in health information dissemination entails that these tools should be used with caution. Some success stories with these tools means that such tools have great potential in improving the dissemination of health information. One good example in the use of Web 2.0 technologies is the 'Life Cafe' project at Kansas State University which successfully uses Web 2.0 information technologies as an awareness tool for the creation of protective factors against suicide. The Google Analytics report proved the growing popularity of this project with students (Shalin, 2009).

An evaluation of the media and channels for the dissemination of health information was done in line with their capacity to reach the intended audience, accessibility and ease of use, timeliness, reliability, flexibility, user friendliness, cost effectiveness, and clarity and attractiveness of the information package. The findings reveal that the majority of respondents view the NUST media and channels as 'poor' in almost all the areas, except with flexibility and cost effectiveness. This means that the media and channels that are being used by NUST to disseminate health information are not effective. This scenario is clear evidence that NUST is not consulting users in the design and implementation of its health promotion programmes. This is in contrast to the information dissemination principle of user centred design and involvement (Harmsworth, Turpin and TQEF National Co-ordination Team, 2000; Jackson et al., 2006).

There is a significant gap between the media that is being used and the format preferred by NUST students in accessing and receiving health information. NUST mainly uses printouts and face-to-face encounters to disseminate health information to students. Cell phones and other electronic media are being used sparingly to do follow-ups on specific individuals. This essentially means that NUST is not adequately addressing student's health information needs in terms of the channels and media for health information dissemination.

King, Hawe and Wise (1998) stressed the need for a two-way information dissemination strategy to ensure the success of health promotion efforts within universities. The National Centre for the Dissemination of Disability Research (2001: 2) also observes that information dissemination approaches that implement a mechanical, one-way flow of information have are not effective. However, NUST mainly uses mechanical, one way strategies in the dissemination of health information. Printouts and notice boards that are used are not interactive; moreover, there is no feedback mechanism that allows the students to air their views on this matter. This is in contrast to the principle of two-way information dissemination of health information.

6.2.1.4 Skills

The theory of Salutogenesis by Antonovsky (1987) and Lindstrom (2010) emphasizes the development of life skills. Their river of life analogy (see Figure 2.6) illustrates that individuals should possess critical life skills that would enable them to manoeuvre in the 'river' of life. Health promotion programmes in universities should therefore focus on building and shaping critical life skills of students. This study argues that life skills are an important ingredient of health information needs because individuals cannot achieve total wellbeing without possessing critical life skills.

University students should be able to access and evaluate health information on their own; they should be able to manage their life for them to live healthy lifestyles. This study therefore evaluated students' life skills. This was necessary because health promotion efforts often overlook this important element of health information needs. Alzougool, Chang and

Gray (2008) called this the ‘unrecognised’ information need because health promoters and even the recipients themselves sometimes do not realise that they have this need.

The findings of this study reveal that the majority of students perceived themselves as having good skills in problem solving and decision making, identity development, interpersonal communication, and health maintenance (see Figure 5.7-5.9). This means that the students have a high self-efficacy, which in this case means a person’s belief about his or her ability and capacity to deal with the challenges of life. This is a positive result at face value; however, a closer look at the results may reveal negative implications. Looking at Alzougool, Chang and Gray’s (2008) ‘unrecognised’ information needs, it is possible that students may not be aware of the actual gaps in their life skills. This study had a limitation that it relied on a subjective measurement of these life skills because it interrogated the perceptions of the students themselves. A more objective measure of the life skills could have produced more accurate results in this area.

There is a possibility that students scored themselves higher on life skills or they were not aware of their skill gaps. This may not truly reflect their health information needs. Moreover, this may lead to health promoters and the students ignoring potential health information needs. The results in a study by Austin et al. (2012: 551) showed that “...students’ confidence about their abilities to find accurate information could be counterproductive, cultivating complacency that ultimately compromised their levels of self-efficacy”.

The students scored low on managing time, participation in community activities, nutritional control, and weight control. This shows that students are at risk of developing health problems such as obesity and other chronic health problems that are related to poor nutrition and lack of exercises. This supports the findings of the Brunt and Rhee (2008: 618) study which concluded that college students are at risk of developing serious health problems because they eat unhealthy food. The results reflect a common lifestyle at universities whereby college students typically have a diet characterised by fast foods and snacks which have high calories and are poor in nutrition.

Austin et al. (2012: 549) argue that successful acquisition and use of health information requires the ability to access and evaluate information sources. This study therefore evaluated students' health information literacy. This is the ability of a student to access, evaluate and use health information effectively. This supports an argument by Miranda and Tarapanoff (2008) and Chiu and Wu (2012) that health information needs should not be divorced from information competencies. This Library and Information Science perspective is useful in understanding health information needs. As pointed earlier on, the Health Sciences perspective of health information needs have a limitation that it tended to view health information needs in the context of health topics needed. Therefore there was a need to broaden the definition of health information needs to enable health promotion efforts to holistically address students' health information needs.

The results show that most students regard themselves as having average skills on searching, understanding and evaluating health information (see Figure 5.10). A significant number (25%) of respondents indicated that they are poor in searching for health information, 24% felt they are poor at evaluating health information and 23% at using health information. The results were not encouraging enough because students are expected to have higher health information literacy levels. A study that was carried out by Ickes and Cottrell (2010: 491) in the United States of America showed that university students had a high health literacy score of 93.83, which was considered satisfactory functional health literacy. The differences in the health literacy level could be attributable to the fact that the students that participated in the study that was conducted by Ickes and Cottrell (2010) had been exposed to health information literacy training programmes. The United States of America has introduced a number of health information literacy initiatives in colleges through the Department of Health and Human Services' (US DHHS) Healthy People 2010 initiative. This is not the case for NUST students who have not been exposed to campus-based health information literacy programme.

It is difficult to know whether the results of this study clearly corroborate or refute earlier findings on health information literacy because there is no consensus in literature on students' health information literacy. However, most studies point to the fact that students do not

possess the necessary skills to assess and effectively utilize health information (Brabazon, 2007; Rowlands and Nicholas, 2007; McCannon, 2009; Austin et al., 2012). Brabazon (2007) observes that students do not know as much about the Internet, Web and Google as they think they do, and are not as good at searching for information as they think they are. A study by Rosenthal and Wilson (2008: 61) in New York reveals that only 10% of college students effectively utilized university counselling services. In a study carried out by Kamau and Ouma (2009), users were asked whether they are able to use the e-resources without any assistance and 50% of the respondents indicated that they are not able to use the e-resources without any assistance.

Health information literacy skills are important because health information is difficult to understand and evaluate because of the jargon that is used in medical literature. The students raised a concern in the focus group discussions that sometimes they find it difficult to understand health information because of the terminology that is normally used in medical journals and other scientific publications. This supports an argument by ElKahi (2012) that the main reason why individuals are not able to access and effectively use health information is that health information is difficult to understand because of medical jargon.

The fact that a significant number of students have difficulty in searching and evaluating health information should be a cause for concern for health promoters at NUST. Studies have shown that there is a lot of inaccurate health information on the Internet. Meric et al. (2002) evaluated 184 breast cancer websites for quality of contents using the *Journal of American Medical Association (JAMA)* benchmarks and found significant variation in accuracy. Of the 184 sites, 12 (7%) contained inaccurate medical statements. A study by Spring (2010: 160) also concluded that many students have limited understanding of the architecture of medical bibliographic databases and this has led to limited understanding of controlled vocabulary such as MeSH (Medical Subject Headings) and other thesauri. This means that NUST students could be relying on inaccurate health information. This situation needs to be addressed by improving the health information literacy skills of students.

The respondents offered two solutions to the problem of health information literacy. The students proposed that NUST should simplify health information and offer training on how to search and evaluate health information. This supports an assertion by the World Health Organisation (2009: 4) that health promotion programmes should support personal and social development through information provision and enhancing life skills. The results of this study show that NUST has not done enough to improve students' life skills. This also entails that the health promotion efforts at NUST are not proactive enough. They tend to focus on existing health problems instead of empowering students to be in total control of their health.

This section is concerned with interpreting and discussing the findings that relate to health information needs of students. The topics that are covered include the content, sources, media and channels and skills. These are the key variables that are used in this study to define health information needs. The next section of this chapter interprets and discusses the data on procedures in developing and implementing a health information dissemination framework

6.3 A Review of Procedures in Developing and Implementing a Health Information Dissemination Framework

The study was guided by certain procedures that are normally followed when developing and implementing a health information dissemination framework. The data that was used to address this aspect of the study was influenced by the literature and supported by the respondents in the study. This is in line with the philosophy of Constructivist Grounded Theory (CGT) that was chosen for this study. A key principle of CGT is that data and analysis are co-constructed in the interaction between the viewer and the viewed, the researcher and the participant (Charmaz, 2003, 2006). Suddaby (2006) also argues for the need to constantly refer to literature when developing theory. Therefore, the respondents and the literature guided the development of the information dissemination framework.

The study used formative evaluation in developing the framework. Formative evaluation is concerned with forming or building the programme or object being evaluated by highlighting its strengths and weaknesses. This study supports approaches that have been used earlier in

developing and implementing health information dissemination frameworks. Power and Hunter (2001) used formative evaluation to develop a strategy for community-based health promotion targeting homeless populations in London, Brighton and the West Midlands. In a later study, Leurs et al. (2005) used formative evaluation when developing a collaborative model to improve school health promotion in the Netherlands. Moore, Smith and Folsom (2012) also evaluated student's preferences for learning about sexual health when they were developing a university health promotion programme.

The steps that have been taken in the development of a health information dissemination framework are somehow similar. This study started by doing a needs analysis, whereby health information needs of students were analysed. This is an important step for a needs-based framework. Moreover, if the needs of the users are taken into account during the early stage of developing a system, that system is likely to be accepted by users because users would feel that they are part of the system. This study therefore supports an argument by Power and Hunter (2001: 597) that identification of information needs is an important precursor to devising successful health promotion interventions.

The study evaluated existing resources with the aim of identifying gaps and providing possible solutions. The study evaluated human resources, infrastructure, the information resources as well as the media and channels currently used for health information dissemination. An evaluation of the human resources revealed that the Student Affairs Department at NUST has serious staff shortages. This scenario is impacting upon health promotion efforts. This situation reiterates an observation made by Savadye (2011) that Zimbabwean universities have not done enough to address students' health concerns.

The study also revealed that NUST is still lagging behind in terms of health promotion infrastructure. The problems that relate to infrastructure include absence of a dedicated website for health promotion, low Internet bandwidth, poor coverage of WIFI, and lack of communications infrastructure such as telephone lines. This is a difficult situation in which to construct an integrated health information dissemination framework. The current scenario

leads to lack of coordination, duplication of efforts and inefficient flow of health information among the key stakeholders.

Development of a health information dissemination framework involves identifying priorities. An analysis of the results managed to identify key areas which need to be addressed when developing and implementing the framework. These areas include broadening the breadth of health topics, infrastructural development, human resource capacity building, health information literacy training, policy formulation and integration of health promotion activities. This is in support of an argument by the Jed Foundation (2011) which argues that resources in universities are almost always limited and therefore planners must make difficult decisions about which problems to focus on first.

There has been an increase on the need for evidence based practice in the field of health promotion. The study therefore reviewed the theories that may be used in informing the design of health promotion programmes. A close look at the data shows that the Social Marketing Theory is popular with both the students and key members of staff involved in the study. The theory of Existentialism was also proposed as a plausible theory for addressing student health needs. The results support Shive and Morris (2006) who evaluated a social marketing campaign and found out that the campaign significantly increased fruit intake by college students.

Although other theories that include the Health Belief Model, Stages of Change Model, and the Diffusion of Innovation Theory have been used at NUST, an integrated and pragmatic approach will be appropriate for implementing health promotion programmes. This is because certain theories are more appropriate for addressing specific health problems. The Health Belief Model, for example, has proved to be useful for tobacco cessation (Arkansas Clean Air on Campus Act, 2009; Marshall and Stylianou, 2010).

Selection and implementation of health interventions should be influenced by the best evidence. Programme implementation involves all the steps needed to put health promotion

strategies and interventions into place and make them available to students. This study reveals that the 'soft landing' is the most plausible approach for implementing the health information dissemination programme. This entails beginning with less serious health topics and then proceeding to more serious health topics.

Programme evaluation is the last step in the development process. The reason for evaluating programmes is to demonstrate that programmes are achieving their intended outcomes, thereby demonstrating that resources are being used wisely. The results of the study reveal that there is a need for evaluation mechanisms for existing health promotion programmes. The Nursing Sister was concerned that the orientation programme has not been evaluated since its inception. Therefore, it is not clear whether it is having any demonstrable of students' health behaviours.

6.4 A Review of Health Information Dissemination Principles

This study was informed by a number of health information dissemination principles proposed by reputable health promotion organisations such as WHO, the RAND Corporation, the Jed Foundation and the National Centre for the Dissemination of Disability Research. This section discusses the principles that were supported by the respondents in this study.

The results show that the most popular principle is the need to use synchronous ICTs in disseminating health information. This is in support of the advice by the Jed Foundation (2011) which supports the use of ICTs which work synergistically in disseminating health information to students. This also supports another key information principle of integrating health promotion activities and programmes. The Jed Foundation and Education Development Centre (2011: 16) believe that health promotion programmes should include a continuum of programmes. This means that a combination of health information dissemination programmes synergistically working together is more likely to produce better results than a single intervention. The use of ICTs is therefore pivotal in achieving this end.

A majority of the respondents agreed with the notion that campus based health information dissemination programmes should focus on disease prevention. This means that NUST should focus on developing students' life skills; moreover, there is need for disseminating information on physical activity, weight control and nutritional control. The results are in line with a study that was carried out by Kicklighter et al. (2010: 98) which demonstrated importance of a health education module which focused on disease prevention among college students.

The study confirmed the need for a policy that would regulate information dissemination activities and programmes. Integration of health information dissemination activities involves putting together different stakeholders and coordination of their activities. An integrated framework cannot operate smoothly without a viable policy. The National Centre for the Dissemination of Disability Research (2001: 3-4) argues that an information dissemination policy is an important tool in ensuring ultimate utilisation of research findings because it describes and clarifies the course of action that ought to be taken by health promotion agents.

Students and staff participating in this study were agreeable to the principle that NUST should disseminate information on a variety of health topics. Students encounter a myriad of physical and emotional health problems in their day to day lives. Therefore, a piece meal approach to solving these problems will not work. There is need for a holistic and comprehensive effort in addressing students' health problems. O'Donnell (2009: iv) supports this viewpoint by claiming that "Optimal health is a dynamic balance of physical, emotional, social, spiritual, and intellectual health".

It is important to clarify that although there is need to disseminate information on a variety of health topics, it is not feasible to disseminate information on all topics at once in one programme. Studies have shown that health information dissemination programmes that focus on one health topic are often successful. A study that was carried out by Radhu et al. (2012) proved the efficacy of a web-based cognitive behavioural therapy for maladaptive perfectionism. Similarly, a study by Hartjes and Baumann (2012) demonstrated the success of

a Web-based malaria risk reduction game for study abroad students. This means that although a health promotion strategy should be broad, there should be individual programmes that focus on specific health issues.

The majority of students felt that they should be consulted during the development and implementation of specific health promotion programmes. This was reiterated by the Student Counsellor who suggested that there is need to respect students' views when it comes to issues pertaining to their health. The Nursing Sister also revealed that students are comfortable with her feedback sessions. However, NUST has not done enough in providing feedback mechanisms for its health promotion programmes. The Nursing Sister and Student Counsellor agreed that there is need for follow-up on existing health promotion programmes. This need for feedback supports the principle of a two-way dissemination. The National Centre for the Dissemination of Disability Research (2001: 2) observes that "...dissemination approaches that implement a mechanical, one-way flow of information have not proven to be effective in encouraging widespread adoption and implementation of new programmes, ideas, and strategies".

This study supports the notion of developing students' life skills. The findings reveal that the majority of students agreed to the principle of developing critical life skills. This was also emphasized by the Student Counselor who suggested that The Student Affairs Department should partner with teaching staff in shaping students' life skills such as time management, study skills, critical thinking, community participation, and information literacy among other skills. A review that was done by Hoffman and Jackson (2003) also revealed that developing personal skills was a key component in developing cost-effective interventions for primary prevention of non-communicable diseases.

The study revealed that most students are comfortable with a wide range of information dissemination media and channels that include electronic media, workshops, lectures, printouts and comedies. Although the majority preferred electronic media, the results show that a significant number of students are comfortable with a variety of non-electronic media

and channels. A majority of the students also supported the principle of multiple dissemination media and channels. Harmsworth, Turpin and TQEF National Co-ordination Team (2000) advised health information providers to think about disseminating health information in a variety of ways to suit the varied needs of the target audience. The findings also support revelations by a study that was carried out by Hoffman and Jackson (2003) which found that interventions that were shown to be effective at reducing tobacco use, increasing physical activity, preventing cardiovascular disease and increasing food security involved a combination of health promotion strategies occurring at the personal, community and structural levels.

The principle of using persuasion techniques for stimulating behaviour change also emerged in the study. The results reveal that the success of health promotion interventions is not only influenced by the messages or the formats used, but it is also influenced by persuasion techniques. The students felt the need for role models, comedies, quizzes, dramas, TV shows and games in influencing their own behaviour. Hartjes and Baumann's (2012) study demonstrated the success of games in reducing the risk of malaria. Kicklighter et al. (2010: 99) found that nutrition survivor game and a popular television show improved fruit intake among students.

6.5 An Integrated Framework for Disseminating Health Information to Students (FDHIS)

The second objective of the study was to develop a needs-based framework for disseminating health information to undergraduate students (see Figure 6.2). This section presents the proposed health information dissemination framework. The proposed framework was mainly influenced by the health information needs of students. The researcher also tapped important insight from applicable health information dissemination principles and procedures discussed in the previous section (Section 6.4).

6.5.1 Rationale for the Proposed Health Information Dissemination Framework

As universities are transforming into the loco parentis for university students, they have been called upon to do more in addressing monolithic health challenges affecting students. The concept of settings-based health promotion was supported by the World Health Organisation's (2005) Bangkok Charter for Health Promotion. This trend gave birth to the concept of health promoting universities which has been gaining momentum worldwide.

Information dissemination has been seen as a key element in health promotion efforts because information is a vital ingredient for behaviour change. Information based interventions have proved to be effective in addressing students health needs and in empowering university students with critical life skills. However, universities in Zimbabwe do not have explicit structures for the dissemination of health information. The framework proposed in this study addressed this lack of a formal framework for disseminating health information within universities in Zimbabwe.

6.5.2 Limitations of the Present Health Information Dissemination System

The limitations of the current health information strategy are enshrined in the traditional medical dichotomy which separates health from illness. This is evidenced by the existence of isolated health promotion programmes. The student clinic at NUST deals with curative care while the counselling department is concerned with emotional health matters. This approach raises a lot of antithetical factors which are addressed by the proposed framework. The major weakness of this approach is that it attempts to address health problems in a piecemeal fashion. Antonovsky (1987) and Lindstrom (2010) also reject this dichotomy because of its ineffectiveness in achieving total wellbeing. Health is influenced by a lot of interrelated factors and therefore health promotion efforts need to be integrated.

The current health information dissemination system at NUST has a number of sources where students can access health information. However, there is an absence of mechanisms for these different sources to coordinate. This results in a lot of duplication of activities and inconsistencies. Suppose a student needs advice on nutritional information, it is not clear

where she would get the best advice because there is no policy which specifies responsibilities.

The current information dissemination system is not explicit. The findings of this study revealed that a majority of the students were not aware of the existence of the health information sources at NUST. Lack of visibility is exacerbated by the absence of explicit structures. This could be one of the reasons why health information services at NUST are being underutilised.

The current health information dissemination system tends to be reactive in nature. Health information dissemination should be both reactive and proactive. Health promoters should not use a fire fighting approach whereby they wait for students to come to them with health problems so that they could solve them. They should be able to reach out to the students in time to avoid health problems. In other words, the system should be prevention-focused. However, currently there is lack of mechanisms for proactive dissemination of information.

The channels and information dissemination media that are being used to convey health information are not in line with the needs of the users. NUST mainly uses traditional methods of notice boards and printouts to disseminate health information while students in this study indicated that they prefer a mix of electronic media, face-to-face encounters and printouts. This means that to a large extent, NUST is not meeting the needs of the user in terms of the media and channels for dissemination of health information.

The current system lacks communications infrastructure. This means that the principle of a two-way dissemination is being compromised because of lack of feedback mechanisms. The voices of the students are not being heard and this makes it difficult for NUST to know whether their information dissemination programmes are being successful. Other problems that are inherent in the current system include its narrow scope in terms of health topics, and lack of human resources. These shortfalls are addressed by the proposed FDHIS.

6.5.3 The Concept of FDHIS and its Components

The proposed framework for disseminating accurate health information to students is made up of six components that include the content, sources, media and channels, skills, dissemination principles and persuasion techniques. The framework provides important guidelines in the development and implementation of health promotion programmes. It also provides guidelines for the management of health information at NUST, including its evaluation, collection, processing, storage and dissemination and use.

6.5.3.1 Content

The findings of the study managed to reveal that students need health information on a variety of health topics. The health topics that are needed by the students are listed in Table 6.1 in the order of their level of demand by the students. The topics that are in very high demand are: physical activity, access to health facilities, how to help others in distress, nutrition, HIV and AIDS and STI prevention. Those in high demand are: stress reduction, access to medical insurance cover, depression and anxiety, injury prevention, and relationship difficulties. The ones in slightly high demand are: problem use of Internet/computer games, cold/flu/sore throat, accommodation, alcohol and other drug use, sleeping difficulty, and violence prevention. The topics in moderate demand are: pregnancy prevention, suicide prevention, tobacco use and management of chronic diseases. The topics are coded with different colours according to their level of demand. This is done to guide health promoters at NUST in prioritising the health topics. The topics in high demand should be given more priority than those in less demand.

NUST should ensure that health information on all these topics is disseminated. As affirmed in the discussion, there should be individual health intervention programme that focus on one or two health topics at a time. Dissemination of the health topics should use the Salutogenetic approach. This means that health promoters should not wait for a health problem to manifest so that they can disseminate health information to address that health problem. Prevention is better than cure; therefore, NUST should proactively disseminate health information to prevent the outbreak of diseases and other ailments.

Table 6.1: Health Topics According To Level of Demand

Health Topics	Colour code
Physical activity	
Access to health facilities	
How to help others in distress	
Nutrition	
HIV and AIDS and STI prevention	
Stress reduction	
Access to medical insurance cover	
Injury prevention	
Depression and anxiety	
Relationship difficulties	
Problems associated with Internet/computer games	
Cold/Flu/Sore throat	
Accommodation	
Alcohol & other drug use	
Sleeping difficulty	
Violence prevention	
Eating disorders	
Grief and loss	
Sexual assault/ relationship violence	
Pregnancy prevention	
Suicide prevention	
Tobacco use	
Management of chronic diseases	

Key: Health Topics According to their Level of Demand

	Very high demand
	High demand
	Slightly high demand
	Moderate demand

6.5.3.2 Sources

The study revealed that preferred information sources include community health educators, Nursing Sister, peer educators, Student Counsellor, and teaching staff. External sources include personal doctors, the Internet and family members. Figure 6.1 depicts the various information sources that were chosen by the students. The arrows are pointing in both directions to show a two-way flow of information between university students and the sources. The current health information dissemination system has no feedback mechanisms. The proposed framework improves the accuracy of the information being disseminated because feedback mechanisms allow NUST to evaluate the system and to make necessary improvements.

The use of multiple sources is in line with a key health information dissemination principle which says that dissemination systems should utilise multiple sources. This improves the availability and variety of health information. However, it should be noted that professional health information sources are recommended for disseminating health information. The study revealed that students trust qualified health personnel. Teaching staff should disseminate information on general health matters such as hygiene, time management, and emotional matters that are less serious. There should be a clear policy for handling health matters, for example, students with emotional health problems should be referred to the Student Counsellor while those with physical health problems should be referred to the Nursing Sister. However, there should be cooperation between the two departments.

The NUST resource centre in the Student Affairs Department should coordinate the various information sources. There should be clear lines of communication among the various health sources. This is because certain health problems may have both a physical and mental dimension. A student with a certain health problem such as an STI would need proper counselling. Clear lines of communication would make the integrated framework a reality. This would enable NUST to solve health problems in a more holistic fashion.

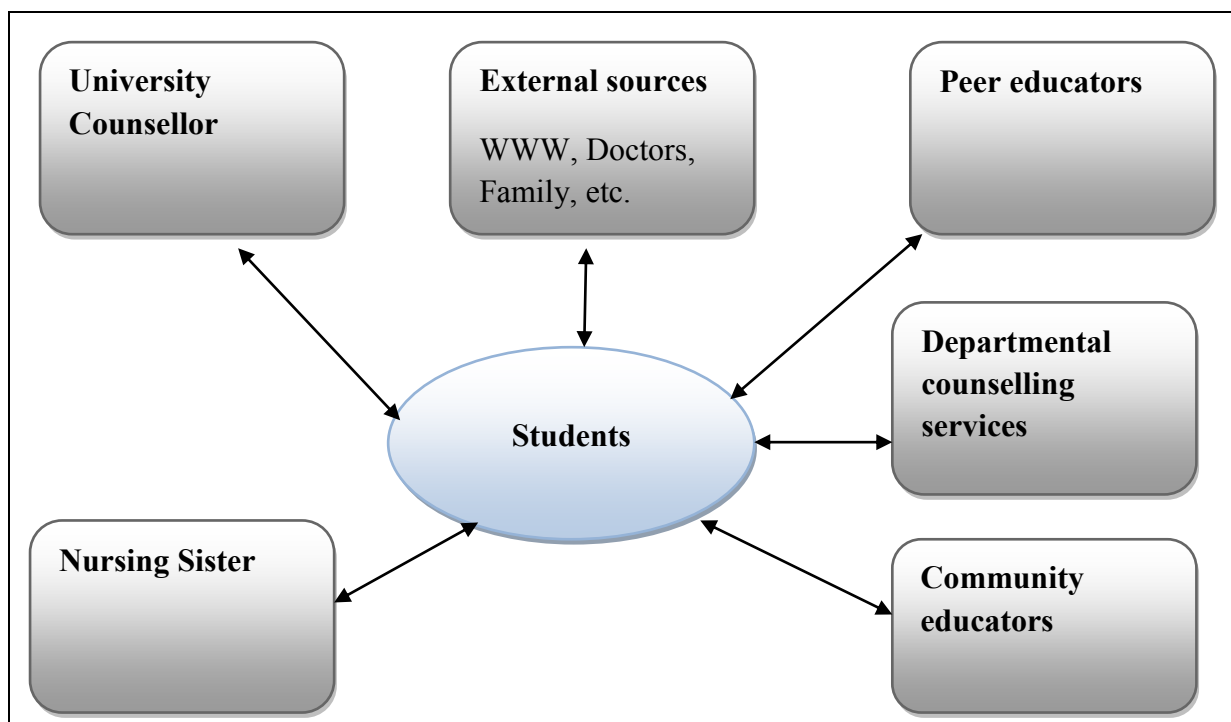


Figure 6.1: Health Information Sources for University Students

6.5.3.3 Media and Channels

Media and channels are important components of the FDHIS. They allow information to be transferred from the sources to the students and vice versa. The media and channels ensure the success of information dissemination efforts by ensuring that the information reaches its destination at the right time, in the desired format. As depicted in Figure 6.2, there are various media and channels that are proposed by the study, including cell phones, websites, social media applications, printouts, flyers, posters and face-to-face encounters through peer education programmes, workshops, and educational programmes.

The choice of media and channels should depend on the health promotion programme at hand. Information that is urgent should be transmitted electronically for timely access. Short messages and alerts can be transmitted via SMS. Posters would be effective for programmes that take more time to address, such as tobacco cessation programmes. Social media applications are appropriate for the peer education programme and information sharing among the students. This approach is in line with the health information dissemination principle of using multiple strategies in disseminating health information.

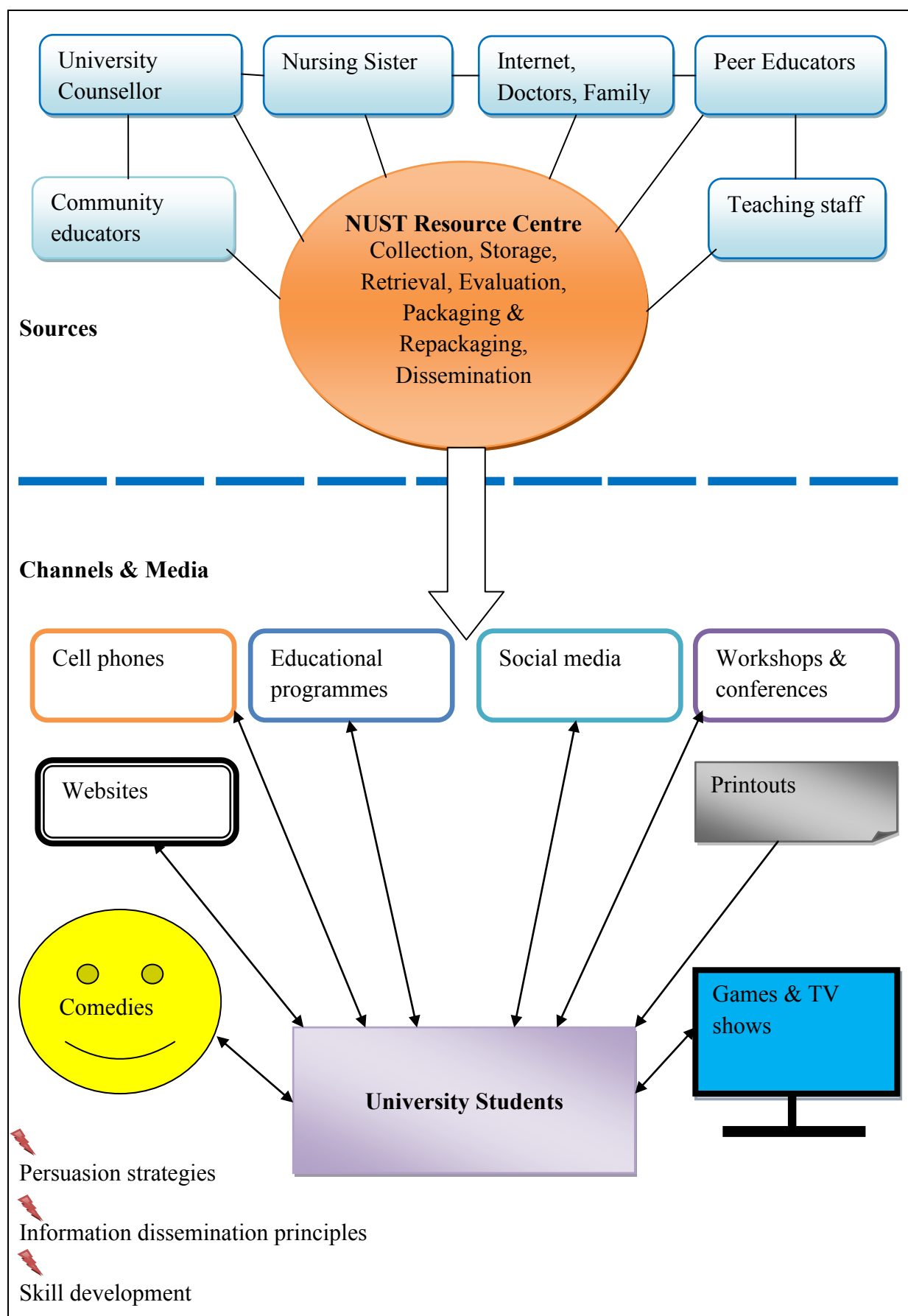


Figure 6.2: Proposed Framework for Disseminating Health Information to Students

6.5.3.4 Skills

The study proposes the development of students' life skills. The theory of Salutogenesis argues that individuals need to develop life skills in order to deal or cope with the different situations in life. The findings reveal that NUST students have average skills in most areas of life, which is not encouraging. The information dissemination strategy should incorporate training of life skills to empower students to be in total control over their health.

The skills that were given priority in this study are time management, developing meaning of life, participation in community activities, nutritional and weight control, understanding health information, and searching and evaluating health information. Although these skills are top priority, it is important to note that there is need for ongoing training on all the skills. The broad areas identified in the study are problem solving and decision making, identity development, interpersonal communication, and health maintenance.

6.5.3.5 Health Information Dissemination Principles

It is important to abide by applicable information dissemination principles when designing and implementing specific health promotion programmes. The study identified a number of information dissemination principles that were supported by the respondents. A list of the principles in the order of their level of acceptance by the respondents in this study is as follows:

- i. The information dissemination system should use and synchronise different Information and Communication Technologies (ICTs) for easier access to health information;
- ii. Health information dissemination at NUST should be prevention-focused so that students can prevent diseases;
- iii. NUST should formulate a policy for effective dissemination of health information to student;
- iv. NUST should disseminate a variety of health topics to students, instead of isolated topics such as HIV and AIDS;
- v. The health information dissemination system should be integrated, instead of isolated programmes targeting specific diseases;

- vi. Students should be consulted and involved during the development and implementation of health information dissemination systems at NUST; and,
- vii. NUST should focus its health information dissemination efforts towards the development of students' life skills so that students can be in control of their health.

6.5.3.6 Persuasion Strategies

Successful dissemination does not entail effective dissemination. This means health information dissemination efforts should not only be concerned with information reaching its destination; it should focus on the effect of that information in catalysing behaviour change. Therefore, the information should be accompanied by persuasion techniques.

The findings reveal that the use of role models is an effective persuasion technique. The technique can therefore be used on dissemination platforms such as conferences and workshops. NUST should identify role models from the community to deliver certain health messages. The findings also reveal that comedies, shows and interactive learning sessions are effective health information dissemination techniques. Persuasion techniques help individuals to accept health information and ultimately change their behaviour. These techniques are effective in areas such as tobacco cessation, fruit intake, and sexual and reproductive issues.

The persuasion techniques should be informed by specific behaviour change theories. The Social Marketing Theory, for example, would apply for role models. The Health Belief Model would be appropriate for tobacco cessation because it arouses fear; in this case posters depicting the dangers of smoking would assist in quitting smoking. The framework uses a pragmatic approach whereby a theory, informed by the integrated theoretical framework (described in detail in Chapter 3), would be appropriate for a specific situation.

6.5.4 Objectives of the FDHIS

The major aim of the information dissemination framework is to facilitate the timely and effective dissemination of accurate health information to university students. The information should be in the right format, and should be disseminated using the right media and channels. The specific objectives of the FDHIS are:

- i. To integrate health promotion activities;
- ii. To ensure timely dissemination of accurate health information to university students, in the right format, using appropriate channels;
- iii. To establish feedback mechanisms to facilitate two-way dissemination of health information;
- iv. To ensure the development of life skills among university students at NUST;
- v. To enhance NUST's capacity in health promotion through human resources and infrastructural development;
- vi. To facilitate the establishment of a viable information dissemination policy; and,
- vii. To ensure successful and effective dissemination of health information.

6.5.5 Unique Features of the Framework

Current health information dissemination strategies in Zimbabwean universities are characterized by isolated information sources, with a variety of channels and media. The proposed framework integrates different information sources to ensure holistic and more effective interventions. This avoids unnecessary overlaps and duplication of effort. The resource centre coordinates all the information management activities to ensure a smooth flow of information. The information from various sources is evaluated for accuracy and it is repackaged if necessary. This allows accurate information to be disseminated in the right format, using the right channels.

The proposed framework uses the Salutogenetic approach to health promotion. This is achieved through skills development, and proactive dissemination of information. The current system awaits students to come with health problems, and therefore it is reactive in nature. The proposed system addresses this through proactive dissemination of information. Tools such as RSS feeds, SMS, and Web applications can be used to disseminate information in

advance. This approach, combined with skills development supports the principle of being preventive, rather than taking the curative approach.

The current system is characterized by a one way flow of information from health information sources to the students, and students have to visit the information sources in search of health information. The proposed information dissemination framework improves this in two ways. Firstly, it reverses the flow of health information. Students do not need to go to the information; the information should come to them. Information can now be transferred to the students without them making conscious efforts to seek for the information. Secondly, the proposed framework allows students to provide necessary feedback, allowing for two way dissemination, which is not the case with the current system. Figure 6.3 compares the current system with the proposed framework in terms of the information flows.

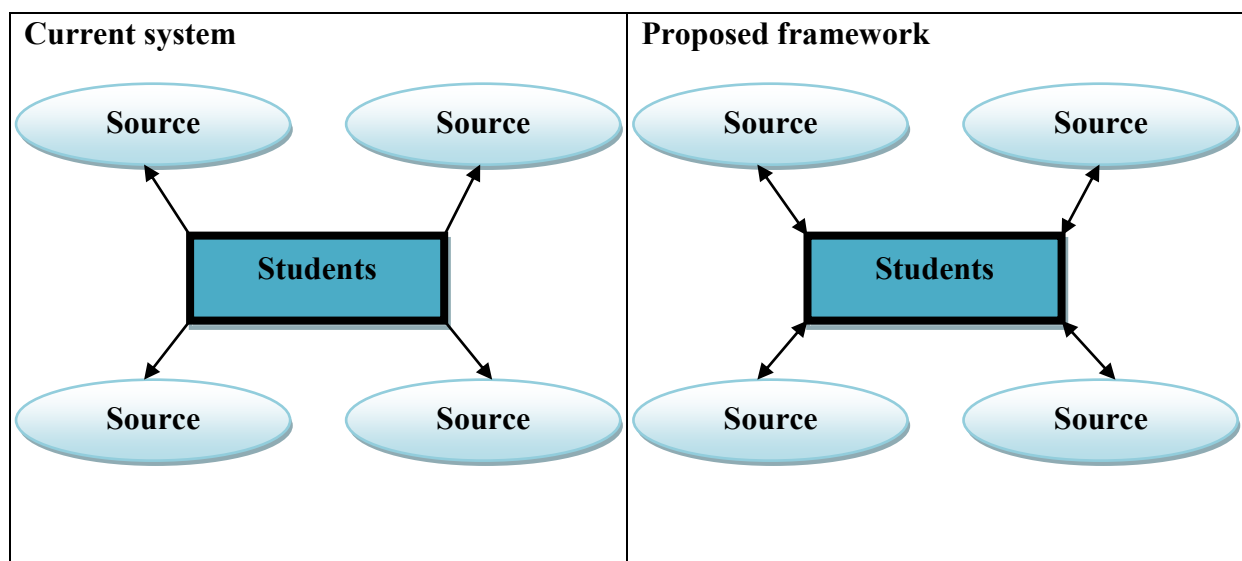


Figure 6.3 Information Flows of the Current System and the Proposed Framework

Accuracy is an important characteristic of health information. Reliance on inaccurate health information may lead to adverse health consequences. Therefore, health information needs to be evaluated to determine its accuracy. The proposed framework addresses this in two ways. Firstly, students need to be taught health information literacy skills so that they can evaluate

health information on their own. Secondly, NUST needs to evaluate the information before it is disseminated to the users.

The findings reveal that health information can be difficult to understand by the layperson. This is because of the jargon that is often used in medical literature. There is, therefore, a need to simplify health information so that it can be understandable. The framework proposes proper packaging and repackaging of health information so that it is received in the right format by the users. This involves simplification of the information and transforming it into the desired format. The results showed that most students prefer electronic media and channels for the dissemination of health information.

The current system seems to be addressing recognised health information needs, ignoring unrecognised health information needs. NUST waits for students to make conscious moves in seeking for health information. This may happen after a student is faced with a health problem. This fire fighting approach is not effective in addressing students' health information needs. Students may choose not to seek health information because they consider it unimportant, the topic is embarrassing or they simply do not have time. In some cases, they may not realise that they need the information. The proposed framework addresses this weakness by addressing these hidden health information needs. Tools such as RSS feeds, SMS, and Blogs should be used to proactively disseminate health information to cater for unrecognised health information needs.

Another important feature of the framework is the use of information dissemination principles and persuasion techniques. Application of information dissemination principles facilitates successful transfer of health information. Persuasion strategies ensure that the information is used to influence behaviour change. These features make the proposed framework unique.

6.5.6 How the Proposed FDHIS Works

The various information sources possess valuable health information that may transform the lives of students. These sources are coordinated by the Student Affairs section through its resource centre, which can also be called a wellness centre. The sources also have a duty to collect health information from outside sources, and work closely with other key stakeholders within the health sector. The duties and responsibilities of the health promoters should be clearly spelt out within the health promotion policy. The framework proposes that there should be constant interaction amongst the various sources through regular workshops and through other communication channels. They should also work together in addressing certain health matters.

Qualified health professionals are tasked with evaluating health information. The information should be evaluated to determine its accuracy, authoritativeness, and timeliness. The evaluated health information, both electronic and print, is collected and stored by the resource centre staff. Tools such as websites and wikis can be used for storing the information. This is because electronic storage is cost effective, the information is easier to manipulate, retrieve, and share. Moreover, it can be printed when necessary.

Health information is never static. It may change due to advances in medicine, changes in government policies, or discovery of new diseases and treatment options. Therefore, the collection needs to be up to date. This may be achieved by subscribing to authoritative medical databases that constantly update their collections. There is also a need for periodic health information needs analyses.

The health information should be transformed into the desired format before dissemination. The health information needs analysis revealed that most students need to access health information electronically and through workshops and other interactive sessions. These platforms can be used to transmit the information. Health alerts, should be disseminated via SMS, chat, social media or RSS feeds. There is a need for packaging and repackaging of the health information for it to suit the desires of the users.

The student should be able to access the health information without the need for any intermediary. There should also be links to external sources because NUST may not be able to possess or collect all the relevant health information. Students would need to be referred to outside health information specialists when necessary.

In some cases, students should be able to receive health information without making any effort. This would address recognised and unrecognised health information needs. Students may not make a conscious effort to seek health information because they feel embarrassed. Moreover, they may not even realise that they need the information. Therefore tools such as RSS feeds and SMS alerts would be helpful in addressing these needs.

There are various dissemination methods that can be used. Each method or a mix of more than one method would depend on the messages being transmitted, and the desired outcome. The use of multiple methods ensures that the diverse needs of the students in terms of the format and media are met. The information should be accompanied by appropriate persuasion strategies. The choice of persuasion strategies also depends with the nature of the health intervention. Successful dissemination is not an end towards behaviour change. Behaviour change is influenced by appropriate persuasion strategies. Figure 6.4 depicts the information flows within the proposed framework.

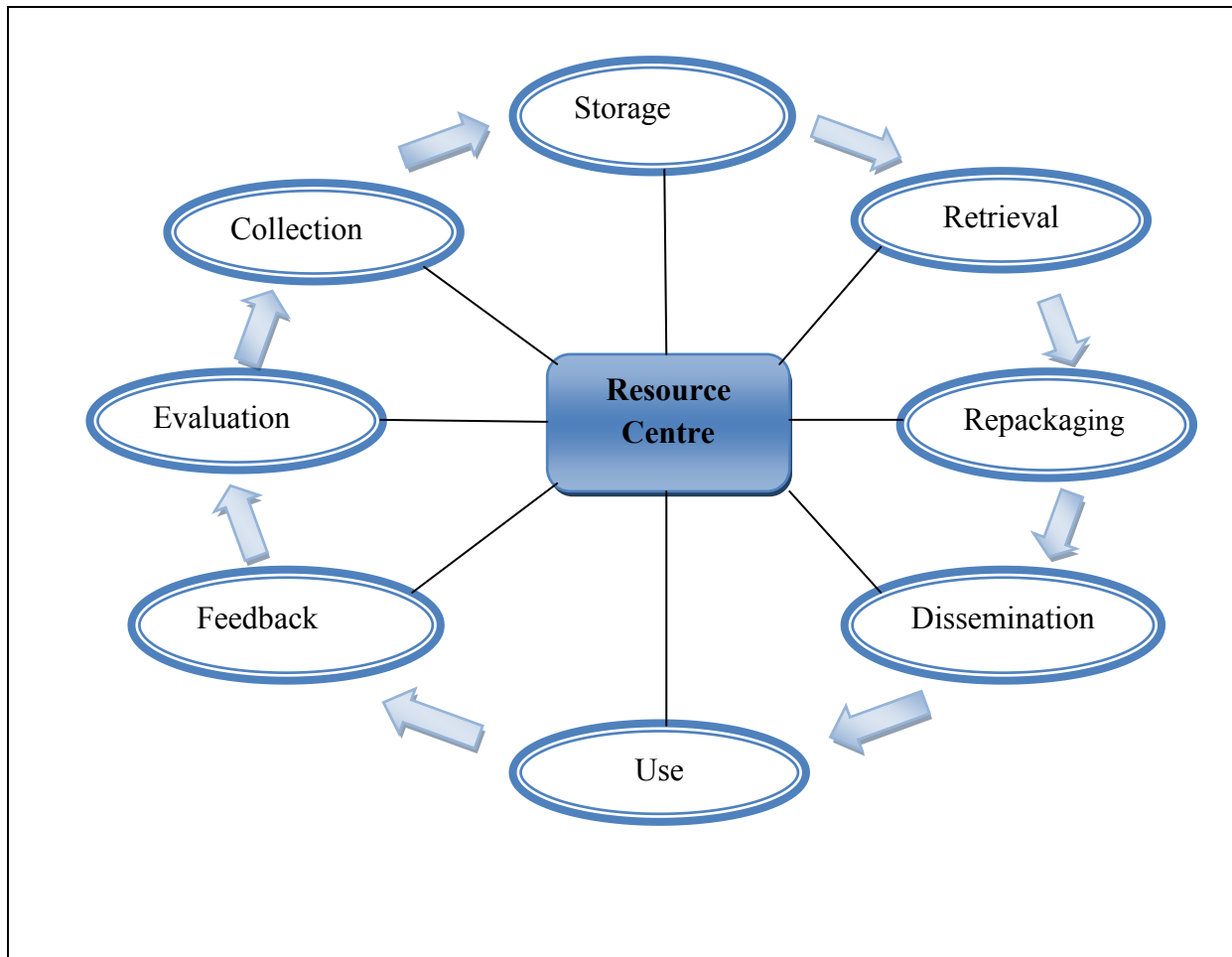


Figure 6.4 Information flows within the FDHIS

6.5.7 Implementation and Evaluation Strategies for the Framework

The findings of the study revealed that that implementation of a health information dissemination framework is overdue. However, there are evaluation strategies that should be taken into account. NUST should recruit more staff to fill in the vacant posts in the Student Affairs Department. There is also a need to develop telecommunications infrastructure for the smooth and efficient flow of health information.

There is need to train both staff and students on health promotion. Staff members can be trained via workshops. Students need more rigorous training in health information literacy, and specific life skills. Health information literacy training is important in ensuring effective information retrieval and evaluation skills. Ultimately, training students in life skills enables them to be in total control over their health by making appropriate decisions in life.

The framework proposed the ‘soft landing’ approach to programme implementation. This strategy was proposed by the Student Counsellor due to its effectiveness in ensuring user acceptance. Learning or grasping new information can be overwhelming for students, considering that they already have other academic pressures. Implementation of specific health promotion programmes therefore should be done in a piece meal fashion. Implementation should begin with less complex health topics and progress to more complex health topics. This strategy should be used to avoid resistance to change, since it is gradual in nature.

Health promotion programmes operate under dynamic and ever-changing internal and external environments. Therefore, there should be constant evaluation of health information dissemination programmes. The feedback mechanisms should allow students to provide their comments on existing programmes and make suggestions for future changes. Formative, summative and process evaluations should be done periodically to ensure that health programmes remain relevant to the needs of students.

6.6 Chapter Summary

This chapter interpreted and discussed the findings of the study. It started by interpreting the key findings of the study, and discussing them in relation to revelations in the literature. An attempt was made to explain, corroborate and clarify the results. The topics that were discussed are health information needs of students, information dissemination principles, and procedures in developing and implementing health information dissemination frameworks. The chapter also presented the proposed information dissemination framework, in line with the apriori and empirical codes. The codes are: Sources, Content, Skills, Media and Channels, Information dissemination principles, Persuasion strategies, and Implementation and evaluation strategies. The researcher also explained how the proposed framework works. The next chapter covers the summary of the study, conclusions, implications of the study, and recommendations.

CHAPTER 7

SUMMARY, CONCLUSIONS AND RECOMMENTATIONS

7.1 Introduction

This chapter provides a summary of the study, and its conclusions and recommendations. The chapter also outlines the various implications of the study findings. The conclusions and recommendation are drawn from the findings of the study. The researcher concludes the chapter by identifying and providing further avenues of research arising from the study.

7.2 Summary

This study was set out to examine, review and document the process of developing a needs-based integrated framework for disseminating health information to undergraduate students. Health information needs of undergraduate students and existing health information dissemination methods were analysed to inform the design of the information dissemination framework. The resultant framework was also influenced by applicable information dissemination principles and procedures.

Adolescents in Zimbabwe used to receive valuable health information from their extended families. However, research has shown a widening gap between youths and their parents. This has been exacerbated by the fact that youths now spend most of their time at school. Hence they no longer have immediate access to health information and end up relying on other health information sources whose authoritativeness is questionable. Reliance on inaccurate health information may often lead to adverse health consequences. Therefore there has been a growing need for platforms that disseminate accurate health information to the youth.

The World Health Organisation (2005), through the Bangkok Charter for health promotion advocated for a settings-based approach towards health promotion. Therefore, universities have been called upon to take a leading role in addressing the health needs of students. This concept of health promoting universities has been widely adopted the world over. There have been deliberate efforts to establish wellness centres, clinics and health promotion programmes within university settings.

Health information dissemination has been hailed as a cost effective measure in addressing students' health needs. Information is an important ingredient in catalysing behaviour change amongst students. However, it is evident that the universities in Zimbabwe have not done enough to address student health needs. There is a lack of explicit health information dissemination platforms. Moreover, the current health intervention approaches take the form of the traditional medical dichotomy that separates health and illness. There are isolated health promotion establishments in the form of clinics and counselling centres which are not coordinating to solve health problems holistically. This study proposes a Salutogenetic approach to health promotion which integrates health promotion efforts. The approach is aimed at achieving wellness by focusing on disease prevention and addressing students health needs in a complete manner.

The study used an integrated theoretical framework which combined information dissemination theories and behaviour change theories. The Theory of Salutogenesis guided the study in its definition of health information needs. The study assimilated theories from the fields of Library and Information Science and Health Sciences to come up with a broader definition of health information needs. This approach helped in understanding the nature and scope of health.

The research used a case study strategy to gather data within the pragmatic paradigm of Grounded Constructivism. Within-method triangulation with complementary data gathering instruments was used to improve reliability of data collected. Questionnaires and focus group discussions were used to gather data from NUST undergraduate students. Interviews were

used to gather data from purposively selected members of NUST staff. Qualitative and quantitative content analysis was used to determine the confounding factors that informed the design of the framework.

The Grounded Constructivism Theory was chosen to mitigate the problem of subjectivity. Developing a needs-based framework may be shrouded by a lot of biases from the users. Moreover, users may not be aware of certain concepts which are useful in the development of a health information dissemination framework. Therefore, the use of authoritative literature had a positive bearing on the objectivity of the study. The study incorporated applicable health information dissemination principles and procedures from reputable health promotion organisations.

7.3 Conclusions and Implications

This section provides the conclusions of the study. The findings gleaned from different sections of the study were synthesized so as to answer the study's research questions.

7.3.1 Health Information Needs of Undergraduate Students

The first research question of the study is on the health information needs of undergraduate students. From the study, it is clear that students require health information from a variety of topics. The study findings therefore support the proposed a broader Salutogenetic definition of health information needs that include content, sources, media, channels and skills. The conclusions on health information needs are biased towards there variables. On the aspect of the content, the study concludes that university students have a variety of health information needs which mainly stem from contemporary health problems. Therefore, they need information on a variety of topics.

The topics can be loosely divided into four categories, according to their level of demand by the students. The topics that are in very high demand are: physical activity, access to health facilities, how to help others in distress, nutrition, HIV and AIDS and STI prevention. Those

in high demand are; stress reduction, access to medical insurance cover, depression and anxiety, injury prevention, and relationship difficulties. The ones in slightly high demand are: problems associated with Internet/computer games, cold/flu/sore throat, accommodation, alcohol and other drug use, sleeping difficulty, and violence prevention. The topics in moderate demand are: pregnancy prevention, suicide prevention, tobacco use and management of chronic diseases.

There is a statistically significant relation between gender and choice of health topics. More females than males prefer more information on stress reduction, depression and anxiety, grief and loss, how to help others in distress, nutrition, pregnancy prevention, relationship difficulty, sexual assault, and violence prevention. A possible reason for this trend is that females react to life events differently from males and health issues such as pregnancy affects females more than males. The data also shows that more males than females have an interest on information on HIV and AIDS, alcohol and drug abuse, and physical activity. A possible explanation for this trend, especially on alcohol and drug abuse is that male students tend to use alcohol and drugs more than females. In African culture, it used to be a taboo for the girl child to be seen smoking or drinking alcohol. However, there is no statistically significant relationship between health information needs and age, faculty and programme of study.

The study looked at health information sources as another variable that defines health information needs. The study concludes that students prefer receiving health information from qualified health personnel and peer educators. The most preferred sources for health information are the Nursing Sister and peer educators. The Student Counsellor and the NUST website also proved to be popular sources of health information. Teaching staff were the least preferred. However, the findings reveal that there is need for coordination among the various health information sources. The research participants agreed to the notion of multiple health information sources, which is cost effective in health information dissemination.

Media and channels are considered an important element of health information need in this study. Therefore the students were asked to indicate their preferred media and channels when accessing or receiving health information. The study concludes that most students prefer to

receive health information electronically. The cell phone was cited as the most preferred method for receiving health information, followed by workshops. Other channels that were cited include seminars, social media applications, conferences and comedy shows. However, doing health related courses and printouts were the least preferred methods for receiving health information.

The Salutogenetic definition of health information needs that was adopted by this study emphasizes the need to develop life skills to achieve total wellbeing. The study therefore evaluated students' life skills. Most students generally perceived themselves as possessing average life skills. The students scored high on identifying and solving problems, identity development and interpersonal communication. The students however scored low on developing meaning of life, searching and evaluating health information and community participation. An analysis of data revealed no statistically significant relationship between life skills and the demographic variables of the students.

The study concludes that NUST students do not possess adequate life skills for them to be in total control of their health. There are significant gaps in students' life skills that need to be addressed when designing and implementing health promotion programmes. The results imply that present health promotion efforts are being affected by lack of skills on the part of the students. For students to achieve total wellbeing, they should possess these critical life skills that would enable them to make appropriate decisions that improve their health and general wellbeing.

7.3.2 The Extent to which NUST is Meeting Health Information Needs of Students

The second research question sought to determine the extent to which NUST is meeting the health information needs of undergraduate students. The study concludes that NUST has not adequately addressed the topics that are required by the students. The study managed to identify significant gaps between the health topics demanded by the students and the topics that are being disseminated at NUST. The major gaps that were identified are on how to help others in distress, physical activity, stress reduction, and nutrition. The findings imply that NUST is not giving priority to the topics that are needed by the students. It was interesting to

note that a significant number of respondents regarded the content as ‘poor’ in terms of its accuracy and ‘average’ in comprehensiveness, relevance, simplicity, and cost effectiveness. This implies that NUST may be disseminating inaccurate health information to students.

NUST has a variety of health information sources that include the Student Counselling Department, departmental counselling services, the Nursing Sister, printouts (mainly posters, and flyers), workshops, peer educators and community health educators. NUST is doing well in diversifying the sources of health information. This is in line with the health information dissemination principle that information dissemination programmes should use multiple sources. NUST is also engaging key stakeholders from the public and private sectors in disseminating health to students. This implies that NUST is taking positive steps in strengthening campus-based health promotion programmes. This is a positive development considering the impact of qualified community health educators in addressing students health needs. A review of literature revealed the concept of social marketing in disseminating health information to students is effective.

However, the health information sources at NUST are still invisible. Moreover, the issue of ‘frozen’ posts in the Student Affairs Department means that NUST still has inadequate personnel for the development and implementation of effective health promotion programmes. Most students complained that they have not received health information from the health sources available at NUST. Moreover, the available health information sources have not performed well in terms of sensitivity to user concerns, trustworthiness, competence and experience. Although these issues are difficult to address considering the harsh economic conditions NUST is operating in, at least there is need for an effort to utilise existing human resources and services through rigorous marketing.

Health information dissemination programmes at NUST are not using relevant channels and media. The findings reveal that printouts and face-to-face encounters are the dominant means for transmitting health information at NUST; cell phones are occasionally used to do follow-ups on students. The major challenges that were cited include lack of communications infrastructure and lack of human resources, poor Internet connectivity and low bandwidth on campus. Students also complained that the NUST website is not interactive.

The health information dissemination principle of using multiple dissemination methods therefore has not yet been fully addressed. The students felt that they need channels that are more interactive, they preferred electronic media to printouts which are being regularly used at NUST. Overall, the students rated the channels and media as poor in accessibility, capacity to reach intended audience, timeliness, reliability, and attractiveness of the information 'package'.

The study concludes that NUST is using ineffective health information sources, media and channels for disseminating health information. Although NUST is making some positive strides in its health promotion programmes, there is still more to be done in addressing the challenges facing university students in the area of health information access. The present situation has negative implications for the success of NUST's health promotion programmes. The sources, channels, media and topics should be relevant to the needs of the users, for them to be effective. The issue of accuracy of health information needs to be given serious attention. Moreover, there is need for infrastructural and human capacity building for NUST to effectively meet the health information needs of students.

7.3.3 Procedures in Developing and Implementing a Framework for Disseminating Health Information to Undergraduate Students.

The third research question and a key objective of the study related to documenting the processes of developing and implementing a needs-based framework for disseminating health information to undergraduate students. The development of an information dissemination framework follows carefully planned and deliberate procedures. The procedures were informed by the research findings and revelations from the literature. The procedures that were followed in this study were influenced by the Jed Foundation (2008, 2009, 2011) and were supported by Power and Hunter (2001), the RAND Corporation (2004), Leurs et al. (2005), and Edwards et al. (2008). This study identified and used a five-step approach to developing and implementing a needs-based health information dissemination framework.

The first step is problem description. This is whereby the researcher describes the current health promotion strategies. The stage involves a needs and resource analysis. This study's first objective was to assess the health information needs of undergraduate students. The health information needs were analysed and used to inform the information dissemination framework. Resource analysis was done to identify the strengths and weaknesses of the health information dissemination programmes at NUST.

Identification of priorities is the second step. This step is important in the design and implementation of health promotion programmes. This study identified a number of priorities that need to be taken into account by health promoters and management at NUST. The health topics that need more priority are: sexual and reproductive health, physical activity, access to health facilities, emotional health, nutrition, HIV and AIDS and STI, injury prevention, and management of chronic diseases. Other areas of priority include human resources and infrastructural development, policy formulation, training of students, and integration of activities.

The third step is concerned with consulting the science, theory and practice of health promotion. This study proposed various behaviour change and health information dissemination theories. The most dominant behaviour change theories identified and proposed in the study include: Existentialism, Social Marketing Theory, Stages of Change Model, Health Belief Model, Social Cognitive Theory and the Empowerment Model. The most popular health information dissemination theories are the Diffusion of Innovation Theory and the Persuasion Model.

The fourth step involves selecting interventions and planning for evaluation. This is whereby researchers select the best forms of health interventions from the evidence that would have been gathered through systematic research. The RAND Corporation (2004: 43) identified three major categories of health interventions that may be adopted, depending on particular circumstances: Universal, Selected and Indicated. These health interventions are described in detail in Chapter 5 under Section 5.4.3.

The fifth and final step in the development of the health information dissemination framework involves implementation and evaluation of the framework. Programme implementation involves all the steps needed to put health promotion strategies and interventions into place and to make them available to students. The data that was gathered from students reveal that most students feel that the implementation of an information based health intervention strategy should be carried out with immediate effect.

The study proposes the idea of “soft landing” during programme implementation; whereby students are provided with general health information to encourage them in the initial stages, and to focus on more serious issues in the later stages of programme implementation. A review of literature revealed three types of evaluations for health intervention strategies: formative evaluation, process evaluation, and summative evaluation. These implementation strategies are described in detail in Chapter 5 under Section 5 4.4.

7.3.4 Applicable Health Information Dissemination Principles

The fourth and final research question of the study related to applicable information dissemination principles. The information dissemination principles guided in the development of the information dissemination framework. The participants agreed with the following information dissemination principles:

- i. A system for disseminating health information should be implemented immediately;
- ii. The information dissemination system should use and synchronise different Information and Communication Technologies (ICTs) for easier access to health information;
- iii. Health information dissemination at NUST should be prevention-focused so that students can prevent diseases;
- iv. NUST should formulate a policy for effective dissemination of health information to students;
- v. NUST should disseminate a variety of health topics to students, instead of isolated topics such as HIV and AIDS;

- vi. The health information dissemination system should be integrated, instead of being isolated programmes targeting specific diseases;
- vii. Students should be consulted and involved during the development and implementation of health information dissemination systems at NUST;
- viii. NUST should focus its health information dissemination efforts towards the development of students' life skills so that students can be in control of their health; and,
- ix. Information dissemination strategies should use persuasion techniques.

7.4 Implications for Theory

The major contribution of this study is the proposed FDHIS. The absence of a framework for disseminating health information to university students at NUST means that health information dissemination programmes are being developed and implemented in a somewhat piecemeal fashion. A theoretical framework for disseminating health information to undergraduate students is therefore pivotal in ensuring cost effective and efficient development and implementation of health information dissemination programmes not only at NUST, but in Zimbabwe as a whole.

The researches that have been done, especially in the field of Health Sciences (Davies et al., 2000; Case, 2002; Kitzrow, 2003; Timmins, 2006 and Braun et al., 2007) tended to look at health information needs from a 'narrow' perspective; often focusing on one or two dimensions or variables of health information needs. This study proposes a broader, Salutogenetic definition of health information needs. This helps in identifying and addressing health information needs holistically for individuals to achieve total wellbeing.

The concept of evidence based practice has gained momentum in every field. There has been an increasing need for evidence in the field of Medicine and other allied professions. This study provides new knowledge that may inform the practice of health information dissemination. An assessment of students' health information needs created a better

understanding of the health information needs of university students. This knowledge was not readily available in literature previously.

This study sheds more light on existing health information practices at NUST and their effectiveness. The study also highlights the behaviour change and information dissemination theories that are more effective within the university settings. There are a number of information dissemination principles in literature, however it is not clear which of the health information dissemination principles are applicable for campus-based health information dissemination programmes. This study highlighted the most applicable health information dissemination principles. This knowledge is useful for policy formulation and health promotion praxis.

7.5 Recommendations

This study proposes the following recommendations; the proposed recommendations have both policy and practical implications and they are drawn from the findings of the study.

- i. The study highlighted a mismatch between the health information needs of students and the existing health information programmes at NUST. NUST should address this by providing health information that is relevant to the needs of the students. This study identified and prioritised the health topics that are required by the students. NUST therefore should disseminate health topics according to their level of demand.
- ii. Media and channels determine the success of information dissemination programmes. NUST should use information dissemination media and channels that are relevant to the needs of the users. A mix of different media and channels has proved to be more effective in addressing the diverse needs of the users (Hoffman and Jackson, 2003). The dissemination of health information should be supported by using synchronous ICTs, which are more interactive. Social media applications can also be applied, not as a source of health information but as a means for collaboration and sharing of health information among the stakeholders.

- iii. The study concludes that the success of health promotion interventions is not only influenced by the media and channels used, but it is also influenced by persuasion techniques. NUST should use interesting ways to convey health information to students. Studies have proved that health information dissemination programmes that are 'preachy' are boring to students and therefore less effective (United Kingdom, Department of Health, 2004). To address this problem, NUST should use comedies, shows, dramas and games in disseminating health information. Moreover, the health information dissemination programmes should be marketed well to improve their visibility and utilisation.
- iv. The human resource capacity at NUST was cited as one of the challenges affecting the success of health promotion programmes. NUST needs to recruit more staff in the Student Affairs Department to engage in health promotion activities. The staff should also be trained in the area of health promotion, especially in the area of evaluating the accuracy of health information.
- v. Health promotion activities cannot be implemented effectively without adequate ICT infrastructure. NUST should invest in communications infrastructure. There is need for better Internet connectivity, more bandwidth, and more telephones lines, connecting the concerned stakeholders. There should be a dedicated website for disseminating health information to students. Moreover, the university should improve the coverage of the WIFI for students.
- vi. The design and implementation of health promotion programmes should be guided by a viable policy. The Ottawa Charter for health promotion highlighted the need for health promotion policies (WHO, 1986). Health promotion policies aid in sharing of responsibilities and coordination of activities. They provide a framework for the efficient and effective design and implementation of health promotion programmes.

- vii. Existing health promotion practices at NUST are based on the traditional medical dichotomy that separate health from illness. This is evidenced by the discrete mental health and medical services. The findings of this study support the need for integrating these services. Integration of different health information dissemination services has a number of advantages that include improved collaboration, sharing of information, continuity of care, client satisfaction, utilisation of services, and efficiency of administrative processes (American College Health Association, 2010).
- viii. In line with the principle of evidence based practice, NUST should implement this proposed framework for disseminating health information to students. Existing health promotion programmes are being implemented without adequate evidence. This study provides useful knowledge on the health information needs of students and the strengths and weaknesses of existing health information dissemination programmes at NUST. This study provides a framework for the design and implementation of future health promotion programmes at NUST.

7.6 Further Research

This study took a more generic approach in evaluating the existing health information dissemination programmes at NUST. There is a need for studies to evaluate specific health information dissemination programmes. This would shed more light on the effectiveness of the channels and media that are being used for specific health intervention. This knowledge is important because certain information dissemination tools that work for certain interventions may not work for other interventions, for example, posters may work for long term health interventions, but may be less effective for short term interventions which require constant updating of information.

The concept of health promoting university encompasses comprehensive, campus wide health promotion interventions. This study focused on the student population at NUST. There is need for studies that inform the design and implementation of health promotion interventions for staff members at NUST. Possible areas of research include health information needs of

staff members, an evaluation of existing health information dissemination methods targeting staff members and possible health intervention strategies.

The findings of this research cannot be easily generalised to other universities in Zimbabwe. NUST has its own unique characteristics. The health interventions at NUST could be different from other universities in Zimbabwe. Moreover, depending on circumstances, health information needs may vary according to demographic and socio-economic conditions. Therefore, there is need for studies that look at health intervention strategies in other universities in Zimbabwe.

7.7 Chapter Summary and General Conclusion

This chapter provided a summary of the study, and its conclusions and recommendations. The chapter also provided implications of the findings for theory, practice and further research. The conclusions of the study were presented in line with the research questions that were generated to address the aim and objectives of the study.

The researcher was satisfied with the application of the pragmatic paradigm of Grounded Constructivism in designing the health information dissemination framework. Grounded Constructivism assumes the relativism of multiple social realities; this provided the researcher with greater flexibility in designing the framework in the sense that the philosophy allowed the researcher to use data from multiple sources. The philosophy had the benefit that both the researcher and the participants were given the chance to participate in the development of the framework. Gathering data from the key stakeholders (students and selected NUST staff) and the literature allowed the researcher to generate a wealth of data that informed the design of the health information dissemination framework.

The case study strategy was appropriate for developing a framework that suits the unique needs of NUST students. The case study allowed the researcher to use multiple research instruments (questionnaires, focus group discussions, and interviews). The use of both qualitative and quantitative data allowed the researcher to address the research questions in a

more complete manner. Evaluation of information dissemination strategies, for example, needed both quantitative and qualitative data. Using multiple, complementary data gathering and analysis techniques and research instruments allowed the researcher to reap the benefits of the qualitative and quantitative research paradigms and to minimize the drawbacks of each.

The conclusions that were drawn from this study are useful in understanding the general health information needs of undergraduate students, and the health information dissemination practices at NUST. The resultant FDHIS informs health information dissemination theory and praxis. There is currently a lack of formalised methods for disseminating health information in institutions of higher learning. This study provides a general framework that may be used by information practitioners in the design of programmes for the dissemination of information, and in this way makes a contribution to the extension of knowledge in the disciplinary domain of Library and Information Science.

References

- Aarø, E.L., Flisher, A.J., Kaaya, S., Onya, H., Fuglesang, M., Klepp, K.I. & Schaalma, H. 2006. Promoting sexual and reproductive health in early adolescence in South Africa and Tanzania: development of a theory- and evidence-based intervention programme. *Scandinavian Journal of Public Health*. 34(2): 150–158. Available: <http://www.uky.edu/~drlane/research/ISLESA/aaro.pdf> [2012, October 26].
- Ajzen, I. & Madden, T. J. 1986. Prediction of goal-directed behavior: attitudes, intentions, and perceived behavioural control. *Journal of Experimental Social Psychology*. 22(5): 453-474.
- Ajzen, I. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes*. 50(2): 179-211.
- Alvi, T., Assad, F., Ramzan, M. & Khan, F.A. 2010. Depression, anxiety and their associated factors among medical students. *Journal of the College of Physicians and Surgeons Pakistan*. 20(2): 122-126. Available: <http://jcpsp.pk/archive/2010/Feb2010/13.pdf> [2013, March 7].
- Alzougool, B., Chang, S. & Gray, K. 2008. Towards a comprehensive understanding of health information needs. *Electronic Journal of Health Informatics*. 3(2): 1-10. Available: <http://www.ejhi.net> [2013, March 25].
- American College Health Association. 2005. The American College Health Association National College Health Assessment (ACHA-NCHA), Spring 2003 reference group report. *Journal of American College Health*. 53(5): 199–210. Available: http://www.acha-ncha.org/docs/JACH_March_2005_SP03_Ref_Grp.pdf [2013, May 20].

American College Health Association. 2010. Considerations for integration of counselling and health services on college and university campuses. *Journal of American College Health*. 58(6): 583-596. Available: <http://dx.doi.org/10.1080/07448481.2010.482436> [2013, March 23].

Anasi, S.N.I. & Nwalo, K.I.N. 2012. In-school adolescent girls' reproductive health information needs and resources in public secondary schools in Lagos State, Nigeria. *PNLA Quarterly*. 76(2): 19-21. Available: <http://unllib.unl.edu/LPP/PNLA%20Quarterly/anasi-nwalo76-2.htm> [2011, April 9].

Anderson, C. 2010. Presenting and evaluating qualitative research. *American Journal of Pharmaceutical Education*. 74(8): 1-7. Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2987281/> [2013, July 15].

Anderson, M.L. & Taylor, H.F. 2009. *Sociology: the essentials*. Belmont, CA: Thomson Wadsworth.

Andrews, T. 2012. What is social constructionism? *Grounded Theory Review*. 11(1): 39-46. Available: <http://groundedtheoryreview.com/2012/06/01/what-is-social-constructionism/> [2013, July 15].

Ankem, K. 2006. Factors influencing information needs among cancer patients: a meta-analysis. *Library & Information Science Research*. 28(1): 7-23. Available: http://knowledgetranslation.ca/sysrev/articles/ankem_2006.pdf [2013, May 9].

Antonovsky, A. 1979. *Health, stress and coping*. San Francisco: Jossey-Bass.

Antonovsky, A. 1987. *Unravelling the mystery of health: how people manage stress and stay well*. San Francisco: Jossey-Bass.

Appleby, J., Walshe, K. & Ham, C. 1995. *Acting on the evidence: a review of clinical effectiveness: sources of information, dissemination and implementation*. Birmingham: National Association of Health Authorities and Trusts, Health Services Management Centre, University of Birmingham.

Arkansas Clean Air on Campus Act. 2009. Available: <http://www.healthy.arkansas.gov/programmesServices/tobaccoprevent/Documents/EducationalCampaigns/SmokeFreeColleges/TOOLKIT.pdf> [2013, May 7].

Aunger, R. & Curtis, V. 2007. *Consolidating behaviour change theory*. Available: <http://www.hygienecentral.org.uk/pdf/AungerCurtis%20BC%20Consolidation.pdf> [2013, July 8].

Austin, E.W., Pinkleton, B.E., Austin, B.W. & Van de Vord R. 2012. The relationships of information efficacy and media literacy skills to knowledge and self-efficacy for health-related decision making. *Journal of American College Health*. 60(8): 548-554. Available: <http://dx.doi.org/10.1080/07448481.2012.726302> [2013, March 23].

Ayres, C., Mahat, G. & Atkins, R. 2013. Testing theoretical relationships: factors influencing Positive Health Practices (PHP) in Filipino college students. *Journal of American College Health*. 61(2): 88-94. Available: <http://dx.doi.org/10.1080/07448481.2012.753889> [2011, April 9].

Babbie, E. 2004. *The practice of social research*. 10th ed. New York: Thompson Wadsworth.

Baker, L.M. 2004. Information needs at the end of life: a content analysis of one person's story. *Journal of the Medical Library Association*. 92(1): 78-82.

Baldwin, J.I., Whiteley, S. & Baldwin, J.D. 1990. Changing AIDS- and fertility-related behavior: the effectiveness of sexual education. *Journal of Sex Research*. 27(2): 245-262.

Bandason, T. & Rusakaniko, S. 2010. Prevalence and associated factors of smoking among secondary school students in Harare Zimbabwe. *Tobacco Induced Diseases*. 8(12): 1-9. Available: <http://www.tobaccoinduceddiseases.com/content/8/1/12> [2011, April 9].

Bandura, A. 1986. *Social foundations of thought and action*. Englewood Cliffs, New Jersey: Prentice-Hall.

Banyard, V.L, Plante, E.G. & Moynihan, M.M. 2004. Bystander education: bringing a broader community perspective to sexual violence prevention. *Journal of Community Psychology*. 32(1): 61-79.

Baxter, L., Egbert, N. & Ho, E. 2008. Everyday health communication experiences of college students. *Journal of American College Health*. 56(4): 427-436. Available: <http://dx.doi.org/10.3200/JACH.56.44.427-436> [2013, March 23].

Baxter, P. & Jack, S. 2008. Qualitative case study methodology: study design and implementation for novice researchers. *The Qualitative Report*. 3(4): 544-559. Available: <http://www.nova.edu/ssss/QR/QR13-4/baxter.pdf> [2012, October 26].

Belkin, N.J., Oddy, R.N. & Brooks, H.M. 1982. ASK for information retrieval: part I. background and theory. *Journal of Documentation*. 38(2): 61-71.

Bendassolli, P. F. 2013. Theory building in qualitative research: reconsidering the problem of induction. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*. 14(1). Art. 25. Available: <http://www.qualitative-research.net/index.php/fqs/article/view/1851/3497>[2014, October 06].

Benigeri, M. & Pluye, P. 2003. Shortcomings of health information on the Internet. *Health Promotion International*. 18(4): 381-386.

Berg, G.V.& Sarvimäki, A. 2003. A holistic-existential approach to health promotion. *Scandinavian Journal of Caring Sciences*. 17(4):384-91. Available: <http://www.ncbi.nlm.nih.gov/pubmed/14629641>[2014, October 06].

Berger, P. & Luckmann, T. 1991. *The social construction of reality*. London: Penguin Books.

Bernard, H.R. 2002. *Research methods in anthropology: qualitative and quantitative methods*. 3rd ed. California: Alta Mira Press, Walnut Creek.

Bingham, R., Barretto, A.I., Walton, M.A., Bryant, C.M., Shope, J.T. & Raghunathan, T.E. 2010. Efficacy of a web-based, tailored, alcohol prevention/ intervention programme for college students: initial findings. *Journal of American College Health*. 58(4): 349-356. Available: <http://dx.doi.org/10.1080/07448480903501178> [2013, May 7].

Birmingham City University. 2013. *How to write a literature review*. Available: <http://www.ssdd.bcu.ac.uk/learner/writingguides/1.04.htm> [2011, April 8].

Blackburn, R. 2000. Breaking down the barriers: using focus groups to research small and medium-sized enterprises. *International Small Business Journal*. 19(1): 44-63.

Blanco, C., Okuda, M., Wright, C., Hasin, D.S., Grant, B.F., Liu, S.M. & Olfson, M. 2008. Mental health of college students and their non-college-attending peers: results from the National Epidemiologic Study on Alcohol and Related Conditions. *Archives of General Psychiatry*. 65(14): 29–37.

Bouman, M., Maas, L. & Kok, G. 1998. Health education in television entertainment – Medisch Centrum West: a Dutch drama serial. *Health Education Research*. 13(4): 503–18.

Boyle, J., Mattern, C.O., Lassiter, J.W. & Ritzler, J.A. 2011. Peer 2 Peer: efficacy of a course-based peer education intervention to increase physical activity among college students. *Journal of American College Health*. 59(6): 519-529. Available: <http://dx.doi.org/10.1080/07448481.2010.523854> [2013, May 22].

Boyne, S. 2009. The PhD literature review: its structure and contribution. In *The Proceedings of the Plymouth Postgraduate Symposium*. M. Jolly & P.K. Wong, Eds. University of Plymouth, UK. 299-315. Available: <https://www.academia.edu> [2013, March 9].

Brabazon, T. 2007. *The University of Google: education in the (Post) information age*. Hampshire: Ashgate.

Brannen, J. 1992. *Combining qualitative and quantitative approaches: an overview*. Aldershot: Avebury.

Braun, L.M.M., Wiesman, F., Van den Herik, H.J., Hasman, A. & Korsten, E. 2007. Towards patient-related information needs. *International Journal of Medical Informatics*. 76(2-3): 246-251.

Brener, N.D. & Gowda, V.R. 2001. US college students' reports of receiving health information on college campuses. *Journal of American College Health*. 49(5): 223-8.

Brunt, A.R. & Rhee, Y.S. 2008. Obesity and lifestyle in U.S. college students related to living arrangements *Appetite* 51(1): 615–621. Available:
http://www.fmh.utl.pt/agon/cpfmh/docs/documentos/recursos/119/77-%20Brunt_2008_Appetite%20%28obesity%20and%20lifestyle%29.pdf [2013, March 9].

Bryman, A. 2004. *Social research methods*. 2nd ed. Oxford: Oxford University Press.

Buor, D. 2008. *Analysing the socio-spatial inequities in the access of health services in sub-Saharan Africa: interrogating geographical imbalances in the uptake of health care*. Available: <http://www.knust.edu.gh/downloads/18/18216.pdf> [2012, October 26].

Burgoon, J.K., Berger, C.R. & Waldron, V.R. 2000. Mindfulness and interpersonal communication. *Journal of Social Issues*. 56(1): 105-127.

Burr, V. 2003. *Social constructionism*. 2nd ed. London: Routledge. CA: Sage.

Butterfoss, F.D., Goodman, R.M. & Wandersman, A. 1993. Community coalitions for prevention and health promotion. *Health Education Research*. 8(3): 315-330.

Campbell, B. & Mbizvo, M. 1994. Sexual behaviour and HIV knowledge among adolescent boys in Zimbabwe. *Central African Journal of Medicine*. 40(9): 245-250.

Cardinal, B.J., Jacques, K.M. & Levy, S. 2002. Evaluation of a university course aimed at promoting exercise behavior. *Journal of Sports Medicine and Physical Fitness*. 42(1): 113–119. Available: <http://www.minervamedica.it/en/journals/sports-med-physical-fitness/article.php?cod=R40Y2002N01A0113> [2013, March 23].

Case, O.D. 2002. *Looking for information: a survey of research on information seeking, needs, and behaviour*. New York: Academic Press.

Catania, J.A., Kegeles, S. M. & Coates, T. J. 1990. Towards an understanding of risk behavior: an AIDS risk reduction model (ARRM). *Health Education Quarterly*. 17(1): 53-72.

Catania, J.A., Kegeles, S.M. & Coates, T. J. 1994. A test of the AIDS risk reduction model: psychosocial correlates of condom use in the AMEN cohort survey. *Health Psychology*. 13(6):548-55.

Chambers, R. 1983. *Rural development: putting the last first*. London: Longman.

Charmaz, K. 2000. Grounded theory: objectivist and constructivist methods. In *Handbook of qualitative research*. N.K. Denzin & Y. S. Lincoln, Eds. Thousand Oaks, Ca: Sage. 509–535.

Charmaz, K. 2003. Grounded theory: objectivist and constructivist methods. In *Strategies of qualitative inquiry*. N.K. Denzin & Y. S. Lincoln, Eds. London: Sage Publications Limited. 249-291.

Charmaz, K. 2006. *Constructing grounded theory: a practical guide through qualitative analysis*. London: Sage Publications Limited.

Chibaya, M. 2012. *Colleges ill-equipped to deal with students' health needs*. Available: <http://www.thestandard.co.zw/component/content/article/71-health-a-fitness/32411-colleges-ill-equipped-to-deal-with-students-health-needs.html> [2012, May 20].

Chinman, M., Imm, P. & Wandersman, A. 2004. *Getting to outcomes™ 2004: Promoting accountability through methods and tools for planning, implementation, and evaluation*. Santa Monica, CA: RAND Corporation. Available: http://www.rand.org/content/dam/rand/pubs/technical_reports/2004/RAND_TR101.pdf [2014, October 14].

Chiparaushe, B., Mapako, O. & Makarau, A. 2010. *A survey of challenges, opportunities and threats faced by students with disabilities in the post-independent era in Zimbabwe*. Harare: Students Solidarity Trust.

Chiu, M.P. & Wu, C. 2012. *Integrated ACE model for consumer health information needs: a content analysis of questions in Yahoo! Answers*. Available: <https://www.asis.org/asist2012/proceedings/Submissions/93.pdf> [2013, June 12].

Choo, C.W. 2006. *The knowing organization*. New York, NY: Oxford University Press.

Christmas, W.A., Turner, H.S. & Crothers, L. 2000. Should college health providers use e-mail to communicate with their patients?: two points of view. *Journal of American College Health*. 49(1): 39-43. Available: <http://dx.doi.org/10.1080/07448480009596281> [2013, May 27].

Cline, R.J.W. & Engel, J.L. 1991. College students' perceptions of sources of information about AIDS. *Journal of American College Health*. 40(2): 55–63.

Collis, J. & Hussey, R. 2003. *Business research: a practical guide for undergraduate and postgraduate students*. 2nd ed. Basingstoke: Palgrave Macmillan.

Colorado Coalition Against Sexual Violence. 2002. *Stimulate conversation*. Available: <http://www.whynotask.org> [2013, June 15].

Conley, C.S., Travers, L.V. & Bryant, F.B. 2013. Promoting psychosocial adjustment and stress management in first-year college students: the benefits of engagement in a psychosocial wellness seminar. *Journal of American College Health*. 61(2): 75-86. Available: <http://dx.doi.org/10.1080/07448481.2012.754757> [2011, April 9].

Consumer and Patient Health Information Section. 1996. The librarian's role in the provision of consumer health information and patient education. *Bulletin of Medical Library Association*. 84(2): 238-239.

Coulter, A., Entwistle V. & Gilbert D. 1999. Sharing decision with patients: is the information good enough? *British Medical Journal*. 318(7179): 318–322.

Coyle, J. & Williams, B. 2000. An exploration of the epistemological intricacies of using qualitative data to develop a quantitative measure of user views of health care. *Journal of Advanced Nursing*. 31(5): 1235-1243.

Crano, W.D. & Prislin, R. 2006. Attitudes and persuasion. *Annual Review of Psychology*. 57(1): 345–74.

Creative Research System. 2012. *The survey system: sample size calculator*. Available: <http://www.surveysystem.com/sscalc.htm> [2012, May 9].

Creswell, J.W. 2002. *Research design: quantitative, qualitative and mixed method approaches*. Thousand Oaks, CA: Sage Publications

Creswell, J.W. 2003. *Research design: qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage Publications.

Creswell, J.W. 2008. *Educational Research: planning, conducting and evaluating Quantitative and Qualitative Research*. Upper Saddle River, NJ: Pearson.

Creswell, J.W. 2012. *Educational research: planning, conducting, and evaluating quantitative and qualitative research*. 4th ed. Available: Upper Saddle River, NJ: Pearson Education. <http://basu.nahad.ir/uploads/creswell.pdf> [2013, July 15].

Creswell, J.W. & Plano C.V. 2007. *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.

Croom, K., Lewis, D., Marchell, T., Lesser, M.L., Reyna, V.F., Kubicki-Bedford, L., Feffer, M. & Staiano-Coico, L. 2009. Impact of an online alcohol education course on behavior and harm for incoming first-year college students: short-term evaluation of a Randomized Trial. *Journal of American College Health*. 57(4): 445-454. Available: <http://dx.doi.org/10.3200/JACH.57.4.445-454> [2013, May 27].

Cukrowicz, K.C., Schlegel, E.F., Smith, P.N., Jacobs, P.M., Van Orden, K.A., Paukert, A.L., Pettit, J.W. & Joiner, T.E. 2011. Suicide ideation among college students evidencing subclinical depression. *Journal of American College Health*. 59(7): 575-581. Available: <http://dx.doi.org/10.1080/07448481.2010.483710> [2013, March 23].

Davenport, R. 2009. From College Counselor to “Risk Manager”: the evolving nature of college counselling on today's campuses. *Journal of American College Health*. 58(2): 181-183. Available: <http://dx.doi.org/10.1080/07448480903221244> [2013, March 9].

Davies, J., McCrae, B.P., Frank, J., Dochnahl, A., Pickering, T., Harrison, B., Zakrzewski, M. & Wilson, K. 2000. Identifying male college students' perceived health needs, barriers to seeking help, and recommendations to help men adopt healthier lifestyles. *Journal of American College Health*. 48(6): 259-267. Available: <http://dx.doi.org/10.1080/07448480009596267> [2013, March 9].

Davis, J.L. 2003. *Teen emotional problems go unnoticed: clinical depression, anxiety disorders, PTSD found in many adolescents*. Available: <http://www.webmd.com/baby/news/20030805/teen-emotional-problems-go-unnoticed> [2013, March 23].

Dawson, R. 2007. *Launching the Web 2.0 framework*. Available: http://www.rossdawsonblog.com/weblog/archives/technology_trends/ [2013, June 7].

Dearing, J.W. 2008. Evolution of diffusion and dissemination theory. *Journal Public Health Management Practice*. 14(2): 99–108. Available: http://www.mmclibrary.com/uploads/Evolution_of_Diffusion_and_Dissemination_Theory.pdf [2013, July 9].

Debbie, E. 2003. Telecentres and the provision of community based access to electronic information in everyday life in the UK. *Information Research*. 8(2). Available: <http://informationr.net/ir/8-2/paper146.html> [2013, August 1].

Deering, M.J. & Harris, J. 1996. Consumer health information demand and delivery: implications for libraries. *Bulletin of the Medical Library Association*. 84(2): 209-216.

DeJong, W. & Langford, L. 2006. *Evaluating environmental management approaches to alcohol and other drug abuse prevention*. Washington, DC: U.S. Department of Education, Higher Education Centre for Alcohol and Other Drug Abuse and Violence Prevention.

DeJong, W. 2007. *Experiences in effective prevention: The U.S. Department of Education's Alcohol and Other Drug Prevention Models on College Campuses Grants*. Washington, D.C.: U.S. Department of Education, Office of Safe and Drug-Free Schools, Higher Education Centre for Alcohol and Other Drug Abuse and Violence Prevention.

Denison, J. 1996. *Behavior change: a summary of four major theories*. Available: <http://ww2.fhi.org/en/aids/aidschap/aidspubs/behres/bcr4theo.html> [2013, July 8].

DeRoos, R.L. 1977. Environmental health and safety in the academic setting. *American Journal of Public Health*. 67(9): 851-854.

Deshpande, S., Basil, M.D. & Basil, D.Z. 2009. Factors influencing healthy eating habits among college students: an application of the Health Belief Model. *Health Marketing Quarterly*. 26(2): 145-164. Available: <http://dx.doi.org/10.1080/07359680802619834> [2013, March 23].

Dervin, B. 1983. *An overview of sense-making research: concepts, methods and results to date*. Available:
<http://faculty.washington.edu/wpratt/MEBI598/Methods/An%20Overview%20of%20Sense-Making%20Research%201983a.htm> [2014, May 23].

Dervin, B. 1992. From the mind's eye of the user: the sense-making qualitative and quantitative methodology. In: Glazier J.D, & Powell, R.R (eds.). *Qualitative Research in Information Management*. Englewood, CO: Libraries Unlimited. pp: 61–84.

Dervin, B. 1998. Sense-making theory and practice: an overview of the user interests in knowledge seeking and use. *Journal of Knowledge Management*. 2(2): 36–45.

Dervin, E., Anderson, S., Hastings, G. & Macfadyen, L. 2005. Targeting smokers via tobacco product labelling: opportunities and challenges for pan European health promotion. *Health Promotion International*. 20(1): 41–9.

Disease Control and Prevention (CDC). 2013. *Workplace health promotion*. Available:
<http://www.cdc.gov/workplacehealthpromotion/evaluation/index.html#FW> [2014, October 06].

Dixon-Woods, M. 2001. Writing wrongs? An analysis of published discourses about the use of patient information leaflets. *Social Science and Medicine*. 52(9): 1417–1432.

Doherty, K. & Low, K.G. 2008. The effects of a Web-based intervention on college students' knowledge of human papillomavirus and attitudes toward vaccination. *International Journal*

of Sexual Health. 20(4): 223–232. Available:

<http://www.tandfonline.com/doi/pdf/10.1080/19317610802411177> [2013, May 23].

Dooris, M. & Doherty, S. 2010. Healthy universities—time for action: a qualitative research study exploring the potential for a national programme. *Health Promotion International*.

25(1): 94-106. Available: <http://heapro.oxfordjournals.org/content/25/1/94.full> [2013, August 1].

Dooris, M. 2001. Health promoting universities: policy and practice – a UK perspective.

Proceedings of the 5th Annual Conference on Community-Campus Partnerships for Health.

5-8 May 2001. San Antonio. Available: http://depts.washington.edu/ccph/pdf_files/p-dooris.pdf [2012, April 4].

Downs, M.F. & Eisenberg, D. 2012. Help seeking and treatment use among suicidal college students. *Journal of American College Health*. 60(2): 104-114. Available:

<http://dx.doi.org/10.1080/07448481.2011.619611> [2013, March 23].

Duggan, F. & Banwell, L. 2004. Constructing a model of effective information dissemination in a crisis. *Information Research*. 9(3): 178-184. Available: [http://InformationR.net/ir/9-](http://InformationR.net/ir/9-3/paper178.html)

[3/paper178.html](http://InformationR.net/ir/9-3/paper178.html) [2012, March 22].

Duke Student Wellness Centre. 2013. *Programmes and workshops*. Available:

<http://studentaffairs.duke.edu/duwell/programmes-and-workshops> [2013, March 23].

Edwards, R.W., Jumper-Thurman, P., Plested, B.A., Oetting, E.R. & Swanson, L. 2008.

Community readiness: research to practice. *Journal of Community Psychology*. 28(3): 291-307. Available: <http://www.happ.colostate.edu/doc/articles/article5.pdf> [2013, July 15].

Ehrhardt, A., Yingling, S. & Warne, P. 1991. Sexual behavior in the era of AIDS: what changed in the United States? *Annual Review of Sex Research*. II: 25-48.

Eisen, A., Kushner, H., McLeod, M., Queen, E., Gordon, J. & Ford, J.L. 2009. An integrated approach to addressing addiction and depression in college students. *Journal of American College Health*. 57(4): 455-456. Available: <http://dx.doi.org/10.3200/JACH.57.4.455-456> [2013, June 17].

Eisenberg, D., Golberstein, E. & Gollust, S.E. 2007. Help-seeking and access to mental health care in a university student population. *Medical Care*. 45(7): 594-601. Available: <http://www-personal.umich.edu/~daneis/papers/hmpapers/help-seeking%20--%20MC%202007.pdf> [2013, March 23].

Eli, L. 2012. *90 million adults in the U.S. have difficulty understanding health information*. Available: <http://newsroom.lilly.com/releasedetail.cfm?releaseid=703606> [2013, March 23].

ElKahi, H.A., Abi Rizk, G.Y., Hlais, S.A. & Adib, S.M. 2012. Health-care-seeking behaviour among university students in Lebanon. *Eastern Mediterranean Health Journal*. 18(6): 598-606. Available: www.ncbi.nlm.nih.gov/pubmed/22888616 [2013, March 23].

Ellis, D. 1989. A behavioural approach to information retrieval design. *Journal of Documentation*. 46(3): 318-338.

Ellis, D., Cox, D. & Hall, K. 1993. A comparison of the information seeking patterns of researchers in the physical and social sciences. *Journal of Documentation*. 49(4): 356-369.

Emmons, K.M., Wechsler, H., Dowdall, G. & Abraham, M. 1998. Predictors of smoking among US college students. *American Journal of Public Health*. 88(1): 104-107. Available: <http://www.ncbi.nlm.nih.gov/pubmed/9584013> [2012, March 22].

Erben, R. 1991. Health challenges for the year 2000: health promotion and AIDS. *Health Education Quarterly*. 18(1): 29–37.

Eriksson, M. & Lindstrom, B. 2007. Antonovsky's Sense of Coherence Scale and its relation with quality of life: a systematic review. *Journal of Epidemiology and Community Health*. 61(11): 938-944. Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2465600/> [2012, March 22].

Eriksson, M. & Lindstrom, B. 2008. A salutogenic interpretation of the Ottawa Charter. *Health Promotion International*. 23(2): 190-199. Available: <http://www.limenetwork.net.au/content/salutogenic-interpretation-ottawa-charter> [2012, March 22].

Eriksson, M. & Lindstrom, B. 2007. Antonovsky's Sense of Coherence Scale and its relation with quality of life: a systematic review. *Journal of Epidemiology and Community Health*. 61(11): 938-944.

Exner, D. & Cummings, N. 2011. Implications for sexual assault prevention: college students as prosocial bystanders. *Journal of American College Health*. 59(7): 655-657. Available: <http://dx.doi.org/10.1080/07448481.2010.515633> [2013, March 23].

Fals-Borda, O. & Rahman, M. 1991. *Action and knowledge: breaking the monopoly with participatory action research*. New York: Apex Press.

Family Health International. 2012. *Qualitative research methods: a data collector's field guide*. Available:
<http://www.fhi360.org/NR/rdonlyres/exojqw6q wz2dfbxk2rdix3dmwzr5i4eviuqzhlu2qk25eabfd6tyttmnmqmo6epkn7mecnva7bw5bh/focusgroups1.pdf>. [2012, July 30].

Family Health International. 2012. *Qualitative research methods: a data collector's field guide*. Available:
<http://www.fhi360.org/NR/rdonlyres/exojqw6q wz2dfbxk2rdix3dmwzr5i4eviuqzhlu2qk25eabfd6tyttmnmqmo6epkn7mecnva7bw5bh/focusgroups1.pdf> [2012, July 30].

Feather, J. & Sturges, P. 2003. *International encyclopedia of information and library science*. 2nd ed. London: Routledge

Ferfolja, T. & Burnett, L. 2009. *Getting started on your literature review: a general guide for postgraduate research students*. Available: <http://www.lc.unsw.edu.au/onlib/litrev2.html>. [2013, April 8].

Firth , J. 1986. Levels and sources of stress in medical students. *British Medical Journal*. 292: 1177-80.

Fishbein, M. & Ajzen, I. 1975. *Belief, attitude, intention and behaviour: an introduction to theory and research*. Reading, Mass: Addison-Wesley.

Fox, S. & Rainie, L. 2007. *The online health care revolution: how the web helps Americans take better care of themselves*. Available: www.pewinternet.org [2010, August 5].

Franzkowiak, P. 1990. Adolescent development and its implications for AIDS prevention. *AIDS Health Promotion Exchange*. 1(1): 1–2.

Free Online Library. 2013. *Information dissemination*. Available: <http://www.thefreelibrary.com>. [2010, August 5].

Gallagher, R.P. 2008. *National survey of counselling centre directors*. Available: <http://www.iacsinc.org/2011%20NSCCD.pdf> [2013, May 6].

Garlow, S.J., Rosenberg, J., Moore, J.D., Haas, A.P., Koestner, B., Hendin, H. & Nemeroff, C.B. 2008. Depression, desperation, and suicidal ideation in college students: results from the American Foundation for Suicide Prevention College Screening Project at Emory University. *Depression and Anxiety*. 25(6):482–8.

Garrard, J., Lewis, B., Keleher, H., Tunny N., Burke L., Harper, S. & Round, R. 2004. *Planning for healthy communities: reducing the risk of cardiovascular disease and Type 2 Diabetes through healthier environments and lifestyles*. Melbourne: Department of Human Services, Victorian Government.

Gaultney, J.F. 2010. The prevalence of sleep disorders in college students: impact on academic performance. *Journal of American College Health*. 59(2): 91-97. Available: <http://dx.doi.org/10.1080/07448481.2010.483708> [2013, March 21].

Gelfand, M. 1979. *Growing up in Shona society*. Gweru: Mambo Press.

Gilbert, S.P. & Weaver, C.C. 2010. Sleep quality and academic performance in university students: a wake-up call for college psychologists. *Journal of College Student Psychotherapy*.

24(4): 295-306. Available: <http://dx.doi.org/10.1080/87568225.2010.509245> [2013, March 23].

Givens, J.L. & Tjia, J. 2002. Depressed medical students' use of mental health services and barriers to use. *Academic Medicine*. 77(9): 18–21.

Glaser, B.G. 2005. *The grounded theory perspective III: theoretical coding*. Mill Valley, CA: Sociology Press.

Godbold, N. 2006. Beyond information seeking: towards a general model of information behaviour. *Information Research*. 11(4): paper 269. Available: <http://InformationR.net/ir/11-4/paper269.html> [2013, March 8].

Golafshani, N. 2003. *Understanding reliability and validity in qualitative research. the qualitative report*. Ontario: University of Toronto.

Gordon, J.B., Barot, L.R. & Fahey, A.L. 2001. The Internet as a source of information on breast augmentation. *Plastics and Reconstructive Surgery*. 107(1): 171–176. Available: <http://www.ncbi.nlm.nih.gov/pubmed/11176620> [2013, March 23].

Gräser, S. 2011. *German Network Health Promoting Universities: health promoting universities activities*. Available: <http://www.gesundheitsfoerdernde-hochschulen.de/> [2013, March 23].

Greenhalgh, T., Glenn, R., MacFarlane, F., Bate, P. & Kyriakidou, O. 2004. Diffusion of innovations in service organisations: systematic review of recommendations. *Millbank Quarterly*. 82(4): 581-629.

Griffin, A. 2013. *Mental illness: a difficult diagnosis with sometimes deadly consequences*. Available:
http://www.oregonlive.com/health/index.ssf/2013/03/mental_illness_a_difficult_dia.html
[2013, March 23].

Gwede, C.K., McDermott, R.J., Westhoff, W.W., Mushore, M., Mushore, T., Chitsika, E., Majange, C.S. & Chauke, P. 2001. Health risk behavior of rural secondary school students in Zimbabwe. *Health Education Behavior*. 28(5): 608-622. Available:
<http://heb.sagepub.com/content/28/5/608> [2012, March 7].

Hacettepe University. 2002. *Adolescents/Young people at universities in Turkey in need of reproductive/sexual health information and services*. Available:
www.huksam.hacettepe.edu.tr/English/Files/WHO1-HRP.doc [2013, March 23].

Hamilton, D. 2002. Traditions, preferences, and postures in applied qualitative research. In *Handbook of Qualitative Research*. N. Denzin & Y. Lincoln, Eds. Thousand Oaks, CA: Sage. 60-69.

Hammersley, M. & Atkinson, P. 2007. *Ethnography: principals in practice*. 3rd ed. London: Routledge.

Hammersley, M. 1992. *What's wrong with ethnography?* London: Routledge.

Hanif, F., Read, J.C., Goodacre, J.A, Chaudhry, A. & Gibbs, P. 2009. The role of quality tools in assessing reliability of the Internet for health information. *Informatics for Health and Social Care*. 34(4): 231-243.

Harmsworth, S., Turpin, S. & TQEF National Co-ordination Team. 2000. *Creating an effective dissemination strategy: an expanded interactive workbook for educational development projects*. Available:
<http://www.innovations.ac.uk/btg/resources/publications/dissemination.pdf> [2013, June 17].

Hartjes, L.B. & Baumann L.C. 2012. Evaluation of a web-based malaria risk reduction game for study abroad students. *Journal of American College Health*. 60(5): 403-414. Available:
<http://dx.doi.org/10.1080/07448481.2012.667464> [2013, May 27].

Health Communication Unit. 2007. *Evaluating health promotion programs*. Available:
http://www.thcu.ca/resource_db/pubs/107465116.pdf [2014, October 06].

Helleve, A., Flisher, A.J., Onya, H., Mathews, C., Aarø, L.E. & Klepp, K.I. 2011. The association between students' perceptions of a caring teacher and sexual initiation. A study among South African high school students. *Health Education Research*. 26(5): 847–858. Available: <http://her.oxfordjournals.org/content/26/5/847.full.pdf+html?sid=548452cc-aae9-4061-aa75-d4b6099d19a9> [2012, October 26].

Hochbaum, G.M. 1958. *Public participation in medical screening programs: a socio-psychological study*. Washington, D.C.: U.S. Government Printing Office.

Hodkinson, P. & Hodkinson, H. 2001. The strengths and limitations of case study research. *Proceedings of the Learning and Skills Development Agency Conference: Making an Impact on Policy and Practice*. Cambridge 2001. Available:
<http://www.education.leeds.ac.uk/people/academic/hodkinson/publications> [2013, June 17].

Hoffman, K. & Jackson, S. 2003. *A review of the evidence for the effectiveness and costs of interventions preventing the burden of non-communicable diseases: how can health systems respond?* Available: http://heapro.oxfordjournals.org/content/21/suppl_1/75.full#ref-8 [2012, July 3].

Hope, R.K.S. 2003. Promoting behavior change in Botswana: an assessment of the peer education HIV/AIDS prevention program at the workplace. *Journal of Health Communication*. 8(3): 267-281.

Hsieh, H.F. & Shannon, S.E. 2005. Three approaches to qualitative content analysis. *Qualitative Health Research*. 15(9):1277-88. Available: <http://www.ncbi.nlm.nih.gov/pubmed/16204405> [2013, June 17].

Huber, S.C., Adamchak, S.E., Fiedler, J.L., Naudé, C., Sturgis, R. & Zanamwe, L. 1994. *Zimbabwe Population Sectoral Assessment*, Arlington, VA, USA: Population Technical Assistance Project. Available: http://pdf.usaid.gov/pdf_docs/PNABU025.pdf [2012, June 21].

Hunt, J. & Eisenberg, D. 2010. Mental health problems and help-seeking behavior among college students. *Journal of Adolescent Health*. 46: 3–10. Available: http://shawover.com/school/wpe124/Week_4/Hunt_Eisenberg_2010_Mental_Health_College_Students.pdf [2013, March 23].

Hussein, A. 2009. The use of triangulation in social sciences research: can qualitative and quantitative methods be combined? *Journal of Comparative Social Work*. 1(1): 1-12.

Ickes, M. J. & Cottrell, R. 2010. Health Literacy in College Students. *Journal of American College Health*.58(5): 491-498. Available:
<http://dx.doi.org/10.1080/07448481003599104>[2013, March 23].

Ingwersen, P. & Jarvelin, K. 2005. *The turn: integration of information seeking and retrieval in context*. The Netherlands: Springer.

International Development Research Council. 2012. *Module 10c: focus group discussion*. Available: http://web.idrc.ca/esaro/ev-56615-201-1-DO_TOPIC.html [2012, July 31].

Ireland National Health Promotion Strategy. 2000-2005. Available:
<http://www.dohc.ie/publications/pdf/hpstrat.pdf?direct=1> [2013, March 23].

Israel, B.A., Checkoway, B., Schulz, A.J. & Zimmerman, M.A. 1994. Health education and community empowerment: conceptualizing and measuring perceptions of individual, organizational, and community control. *Health Education Quarterly*. 21(2): 149-170.

Jackson, T. 2005. *Motivating sustainable consumption: a review of evidence on consumer behaviour and behavioural change*. Sustainable Development Research Network. Available:
<http://www.worldresourcesforum.org/files/file/Jackson%20-%20Motivating%20Sustainable%20Consumption%20%28abstract-chapter11-chapter12%29.pdf> [2012, February 20].

Jackson, F.S., Perkins, F., Khandor, E., Cordwell, L., Hamann, S. & Buasai, S. 2006. Integrated health promotion strategies: a contribution to tackling current and future health challenges. *Health Promotion International*. 21(suppl 1): 75-83. Available:
<http://heapro.oxfordjournals.org> [2012, February 20].

Jadoon, N.A., Yaqoob, R., Raza, A., Shehzad, M.A. & Zeshan, S.C. 2010. Anxiety and depression among medical students: a cross-sectional study. *Journal of the Pakistan Medical Association*. 60(8): 699-702. Available: <http://www.ncbi.nlm.nih.gov/pubmed/20726214> [2013, March 7].

Jamela, C. 2011. *The price of education: sexual abuse and HIV/AIDS at Zimbabwe's universities*. Available: http://www.thewip.net/contributors/2011/05/the_price_of_education_sexual.html [2012, March 29].

James, D. 2004. Factors influencing food choices, dietary intake, and nutrition-related attitudes among African Americans: application of a culturally sensitive model. *Ethnicity and Health*. 9(4): 349-367. Available: <http://dx.doi.org/10.1080/1355785042000285375> [2013, March 23].

Jardin, B., Looby, A. & Earleywine, M. 2011. Characteristics of college students with attention-deficit hyperactivity disorder symptoms who misuse their medications. *Journal of American College Health*. 59(5): 373-377. Available: <http://dx.doi.org/10.1080/07448481.2010.513073> [2013, March 21].

Jed Foundation. 2008. *Campus Mental Health Action Planning (CampusMHAP): Part II: Identifying Priorities*. Available: https://www.jedfoundation.org/assets/Webinars/IdentifyingPriorities/CampusMHAP_2_%20Slideshow.pdf [2014, September 29].

Jed Foundation Campus. 2009. *Mental Health Action Planning (CampusMHAP) Part III: Developing Programs*. Available: <https://www.jedfoundation.org/assets/WebinarIIIFinal2-25-09website.pdf> [2014, September 29].

Jed Foundation & Education Development Centre. 2011. *A guide to campus mental health action planning*. Available: http://www.sprc.org/sites/sprc.org/files/library/CampusMHAP_Web%20final.pdf [2013, March 23].

Johannessen, K., Collins, C., Mills-Novoa, B. & Glider, P. 1999. *Alcohol abuse prevention: a campus case study in implementing social norms and environmental management approaches*. Available: <http://www.socialnorms.campushealth.net/images/guidebook-files/guidetoalcoholprevention.pdf> [2013, March 27].

Johnson, J.D. 2003. On context of information seeking. *Information Processing and Management*. 39(1): 735–760.

Jonassen, D.H. & Land, S.M. 2000. *Theoretical foundations of learning environments*. Mahwah, NJ: Lawrence Erlbaum.

Julien, H. & Michels, D. 2004. Intra-individual information behaviour in daily life. *Information Processing and Management*. 40(3): 547–562. Available: www.researchgate.net [2013, May 9].

Jung, T. & Heald, G.R. 2009. The effects of discriminate message interventions on behavioural intentions to engage in physical activities. *Journal of American College Health*. 57(5): 527-535. Available: <http://dx.doi.org/10.3200/JACH.57.5.527-535> [2013, May 22].

Kamau, N. & Ouma, S. 2009. *The impact of E-resources in the provision of health and medical information services in Kenya*. Nairobi: Kenya Medical Research Institute. Available: <http://www.icml9.org/programme/track1/public/documents/Nancy%20Kamau-164845.doc> [2010, January 7].

Kane, M. 2001. Current concerns in validity theory. *Journal of Educational Measurement*. 38(4): 319-342. Available: http://englishvls.hunnu.edu.cn/Downloads/LangTst/tst_007.pdf [2013, July 15].

Kariwo, M.T. 2007. Widening access in higher education in Zimbabwe. *Higher Education Policy*. 20(1): 45-59.

Kellogg Foundation. 2004. *Using logic models to bring together planning, evaluation, and action: Logic model development guide*. Battle Creek, Michigan.

Kicklighter, J.R., Koonce, V.J., Rosenbloom, C. & Commander, N.E. 2010. College freshmen perceptions of effective and ineffective aspects of nutrition education. *Journal of American College Health*. 59(2): 98-104. Available: <http://dx.doi.org/10.1080/07448481.2010.483709> [2013, March 23].

Kim, Y.M., Kols, A., Nyakauru, R. Marangwanda, C. & Chibatamoto, P. 2001. *International Family Planning Perspectives*, 2001, 27(1):11-19. Available: <http://www.guttmacher.org/pubs/journals/2701101.html> [2012, June 21].

King, L., Hawe, P. & Wise M. 1998. Making dissemination a two-way process. *Health Promotion International*. 13(3): 237-244. Available: <http://www.ingentaconnect.com/content/oup/heapro/1998/00000013/00000003/art00237> [2012, March 29].

Kippax, S. & Crawford, J. 1993. Flaws in the theory of reasoned action. In *The theory of reasoned action: its application to AIDS preventive behaviour*. D.J.Terry, C. Gallois & M. McCamish, Eds. New York: Pergamon Press. 227–252.

Kitzrow, M.A. 2003. The mental health needs of today's college students: challenges and recommendations. *NASPA Journal*. 41(1): 165-179. Available: http://depts.washington.edu/apac/roundtable/1-23-07_mental_health_needs.pdf [2013, March 23].

Klein, A. 2011. *Incoming college students rate emotional health at record low, annual survey finds: economy continues to shape student expectations for college, political views*. University of California Newsroom. Available: <http://newsroom.ucla.edu/portal/ucla/> [2012, March 2].

Klein, S.S. & Gwaltney, M.K. 1991. Charting the education dissemination system. *Knowledge: Creation, Diffusion, Utilization*. 12(3): 241-265.

Clues-Ketels, M. 2006. *Salutogenesis: searching for treasure instead of mistakes*. Available: http://www.ewcol.net/salu-emp_en.html [2013, August 1].

Knox, K.L., Litts, D.A., Talcott, G.W., Feig, J.C. & Caine, E.D. 2003. Risk of suicide and related adverse outcomes after exposure to a suicide prevention programme in the US Air Force: cohort study. *British Medical Journal*. 327(7428): 1376-1380.

Komiya, N., Good, G.E. & Sherrod, N.B. 2000. Emotional openness as a predictor of college students' attitudes toward seeking psychological help. *Journal of Counseling Psychology*. 47(1): 138–43.

Koonce, T.Y. 2007. Toward a more informed patient: bridging health care information through an interactive communication portal. *Journal of the Medical Library Association* 95(1): 77- 90.

Kortum, P., Edwards, C. & Richards-Kortum, R. 2008. The impact of inaccurate Internet health information in a secondary school learning environment. *Journal of Medical Internet Research*. 10(2): e17. Available: <http://www.jmir.org/2008/2/e17/> [2013, June 17].

Kothari, C. R. 2011. *Research methodology: methods and techniques*. New Delhi: New Age.

Kotler, P., Roberto, N. & Lee, N.R. 2002. *Social marketing: improving the quality of life*. 2nd ed. New York: Sage.

Krukowski, R.A., Harvey-Berino, J., Kolodinsky, J., Narsana, R.T. & DeSisto, T.P. 2006. Consumers may not use or understand calorie labelling in restaurants. *Journal of the American Dietetic Association*. 106(6): 917–920.

Kuhlthau, C.C. 1991. Inside the search process: information seeking from the user's perspective. *Journal of the American Society for Information Science*.42: 361-371.

Kuhlthau, C. C. 2004. *Seeking meaning: a process approach to library and information services*. 2nd ed. Westport, CT: Libraries Unlimited.

Kulinna, P., Warfield, W.W., Jonaitis, S., Dean., M. & Corbin, C. 2009. The progression and characteristics of conceptually based fitness/wellness courses at American universities and colleges. *Journal of American College Health*. 58(2): 127-131. Available: <http://dx.doi.org/10.1080/07448480903221327> [2013, March 23].

Kupchella, C.E. 2009. Colleges and universities should give more broad-based attention to health and wellness—at all levels. *Journal of American College Health*. 58(2): 185-186. Available: <http://dx.doi.org/10.1080/07448480903375946> [2013, March 23].

Kurtz, D.T. & Boone, M.T.C. 2001. *Business research methods*. New Delhi: Ess Ess.

Kwan, M.Y.W., Arbour-Nicitopoulos, K.P., Lowe, D., Taman, S. & Faulkner, G.E.J. 2010. Student reception, sources, and believability of health-related information. *Journal of American College Health*. 58(6): 555-562. Available: <http://dx.doi.org/10.1080/07448481003705925> [2013, March 23].

Labrecque, M., Theoret, L. & Paquin, L.H. 1999. Health care needs of students and personnel at a university. *Canadian Nurse*. 95(1): 38–42.

Lambert, E.C. 2001. College students' knowledge of human papillomavirus and effectiveness of a brief educational intervention. *The Journal of the American Board of family Practice*. 14(3): 178–183. Available: <http://www.jabfm.org/content/14/3/178.full.pdf+html?sid=17e07d1f-68a7-4319-8054-2a4b4526d811> [2013, May 22].

Lambert, S.D. & Loiselle, C.G. 2007. Health information seeking behaviour. *Qualitative Health Research*. 17(8): 1006-1019.

Lamis, D.A. & Jahn, D.R. 2013. Parent–child conflict and suicide rumination in college students: the mediating roles of depressive symptoms and anxiety sensitivity. *Journal of American College Health*. 61(2): 106-113. Available: <http://dx.doi.org/10.1080/07448481.2012.754758> [2013, March 23].

Langford, L. 2006. *Preventing violence and promoting safety in higher education settings: Overview of a comprehensive approach*. Washington, DC: U.S. Department of Education, Higher Education Centre for Alcohol and Other Drug Prevention.

Lather, P. 1992. Critical frames in educational research: feminist and post-structural perspectives. *Theory into Practice*. 31(2): 87-99. Available: <http://www.eric.ed.gov/ERICWebPortal/search/> [2010, July 23].

Laws, K. & McLeod, R. 2004. Case study and grounded theory: sharing some alternative qualitative research methodology with systems professionals. *Proceedings of the 22nd International Conference of Systems Dynamics Society*. July 2004. Oxford: England. Available: www.systemdynamics.org/conf2004/ [2013, July 15].

Legarde, E, Pison, G. & Enel C. 1998. Risk behaviours and AIDS knowledge in a rural community of Senegal: relationship with sources of AIDS information. *International Journal of Epidemiology*. 27(5): 890-6.

Leger, L. 2006. Communication technologies and health promotion: opportunities and challenges. *Health Promotion International*. 21(3): 169–171.

Lenhart, A., Madden, M., Macgill, A. R. & Smith, A. 2007. *Teens and social media*. Washington, DC: Pew Internet & American Life Project.

Leurs, M.T.W., Schaalma, H.P., Jansen, M.W.J., Mur-Veeman, I.M., St. Leger, L.H. & De Vries, N. 2005. Development of a collaborative model to improve school health promotion in the Netherlands. *Health Promotion International*. 20(3): 296-305.

Leurs, M.T.W., Schaalma, H.P., Jansen, M.W.J., Mur-Veeman, I.M., St. Leger, L.H. & De Vries, N. 2005. Development of a collaborative model to improve school health promotion in the Netherlands. *Health Promotion International*. 20(3): 296-305. Available: <http://www.readcube.com/articles/10.1093/heapro/dai004>[2013, March 23].

Lewis, J.L. & Sheppard, S.R.J. 2006. Culture and communication: can landscape visualization improve forest management consultation with indigenous communities? *Landscape and Urban Planning*. 77(3): 291–313.

Leydon, G.M., Boulton, M. & Moynihan, C. 2000. Cancer patients information needs and information seeking behaviour: in-depth interview study. *British Medical Journal*. 320(7239): 909–913.

Lindsey, B. 1997. Peer education: a viewpoint and critique. *Journal of American College Health*. 45(4): 187–189.

Lindström, B. & Eriksson, M. 2006. Contextualising salutogenesis and Antonovsky in public health. *Health Promotion International*. 21: 238-244. Available: <http://heapro.oxfordjournals.org/content/21/3/238.full>[2013, March 23].

Lindström, B. 2010. *Salutogenesis: an introduction*. Available: http://www.centrelearoback.org/assets/PDF/04_activites/clr-GCPB121122-Lindstrom_pub_introsalutogenesis.pdf [2013, March 23].

Lindström, B., & Eriksson, M. 2006. Contextualising salutogenesis and Antonovsky in public health. *Health Promotion International*. 21(3): 238-244. Available: <http://heapro.oxfordjournals.org/content/21/3/238.full> [2010, July 23].

Lionis, C., Thireos, E., Antonopoulou, M., Rovithis, E., Philalithis, A. & Trell, E. 2006. Assessing university students' health needs: lessons learnt from Crete, Greece. *European Journal of Public Health*. 16(1): 112.

Longo, D.R. 2005. Understanding health information, communication and information seeking of patients and consumers: a comprehensive and integrated model. *Health Expectations*. 8(3): 189–194. Available: <http://onlinelibrary.wiley.com/doi/10.1111/j.1369-7625.2005.00339.x/pdf> [2013, May 9].

Luker, K.A., Beaver, K., Leinster, S.J., Owens, R.G., Degner., L.F. & Sloan, J.A. 1995. The information needs of women newly diagnosed with breast cancer. *Journal of Advanced Nursing*. 22(1): 134–141.

MacPhail, C. & Campbell, C. 2001. 'I think condoms are good but, aai, I hate those things': condom use among adolescents and young people in a Southern African township. *Social Science Medicine*. 52(11): 1613-1627. Available: http://eprints.lse.ac.uk/3177/1/I_think_condoms_are_good_but_%28LSERO%29.pdf [2012, July 23].

Mactavish, J.B. & Scheien, S.J. 2000. Beyond qualitative and quantitative data linking: an example from a mixed method study of family recreation. *Therapeutic Recreation Journal*. 34(2): 154-161.

Maggs, J.L. & Schulenberg, J.E. 2004. Trajectories of alcohol use during the transition to adulthood. *Alcohol Research and Health*. 28(4): 195–201.

Maibach, E.W., Rothschild, M.L. & Novelli, W.D. 2002. Social marketing. In *Health Behavior and Health Education*. K. Glanz, F.M. Lewis & B.K. Rimer Eds, San Francisco, CA: Jossey-Bass.

Maposa, S. 2012. The overview of HIV & AIDS [Lecture]. National University of Science and Technology. 16 May.

Marcella, R., Baxter, G. & Moore, N. 2002. Theoretical and methodological approaches to the study of information need in the context of the impact of new information and communications technologies on the communication of parliamentary information. *Journal of Documentation*. 58(2): 185-210.

Marshall, C. & Rossman G.B. 1999. *Designing qualitative research*. 3rd ed. Newbury Park, CA: Sage Publications.

Marshall, J. & Stylianou, H. 2010. A practical guide to becoming a healthy college. Available: http://www.bradfordcollege.ac.uk/student_life/healthy-college/Healthy_College_Book.pdf [2013, May7].

Mattar, J.A. 2010. Constructivism and connectivism in education technology: active, situated, authentic, experiential, and anchored learning. Available: <http://www.joaomattar.com/Constructivism%20and%20Connectivism%20in%20Education%20Technology.pdf> [2010, October 17].

Maxwell, J.A., & Loomis, D.M. Eds. 2003. Mixed Methods Design: An Alternative Approach. Thousand Oaks, CA: Sage. In *Handbook of mixed methods in social and behavioural research*. A. Tashakkori, & C. Teddlie, Eds. Thousand Oaks, CA: Sage. 241-272

Mayer, D.K., Terrin N.C, Kreps, G.L., McCance, K., Parsons, S.K. & Mooney, K.H. 2007. Cancer survivors information seeking behaviors: a comparison of survivors who do and do not seek information about cancer. *Patient Education and Counseling*. 65(3): 342–350.

McCain, M. & Mustard, J.F. 1999. *Reversing the real brain drain: early years study*. Toronto: Publications Ontario.

McCannon, R. 2009. Media literacy/media education: solution to big media? In: Strasburger, V.C., Wilson, B.J., Jordan, A.B, eds. *Children, Adolescents, and the Media*. 2nd ed. Los Angeles, CA: Sage.

McGlynn, E.A. 1998. *Health information systems: design issues and analytic applications*. Available: www.questia.com/PM.qst?a=o&se=gglsc&d=91340788 [2010, July 23].

McGuire, W.J. 1989. Theoretical foundations of campaigns. In: Rice, R. and Atkin, C. (Eds.). *Public communication campaigns*. 2nd ed. London: Sage. 43-65.

McIntosh, B.J., Compton, M.T. & Druss, B.G. 2012. Students left behind: the limitations of university-based health insurance for students with mental illnesses. *Journal of American College Health*. 60(8): 596-598. Available: <http://dx.doi.org/10.1080/07448481.2012.726301> [2013, March 23].

McKay, A. 1998. *Ideology and schooling towards democratic sexuality education*. London: The Althouse Press.

McKenzie, J. F., Neiger, B. L. & Thackeray, R. 2009. *Planning, implementing, and evaluating health promotion programmes*. 5th ed. San Francisco: Benjamin Cummings.

McLeroy, K. R., Bibeau, D., Steckler, A. & Glanz, K. 1988. An ecological perspective on health promotion programs. *Health Education Quarterly*. 15(4): 351-377.

McNamara, C. 1999. *Basics of conducting focus groups*. Available:
<http://www.mapnp.org/library/evaluatn/focusgrp.htm> [2012, July 20].

Meekers, D. & Wekwete, N. 1997. *The Socioeconomic and Demographic Situation of Adolescents and Young Adults in Zimbabwe*. Calverton: Macro International.

Megivern, D., Pellerito, S. & Mowbray C. 2003. Barriers to higher education for individuals with psychiatric disabilities. *Psychiatric Rehabilitation Journal*. 26(3): 217–31.

Meier, S., Stock, C. & Krämer, A. 2007. The contribution of health discussion groups with students to campus health promotion. *Health Promotion International*. 22(1): 28-36.

Meric, F., Bernstam, E.V., Mirza, N.Q., Hunt, K.K, Ames, F.C., Ross, M.I., Kuerer, H.M., Pollock, R.E., Musen, M.A. & Singletary, S.E. 2002. Breast cancer on the world wide web: cross sectional survey of quality of information and popularity of websites. *British Medical Journal*. 324(7337): 577–581. Available:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC78995/> [2013, March 23].

Michie, S. & Abraham, C. 2004. Interventions to change health behaviours: evidence based or evidence inspired? *Psychology and Health*. 19(1): 29-49. Available:
<http://umh1365.edu.umh.es/wp-content/uploads/sites/95/2013/02/Bringinn-Interventions-to-change-health-behaviors.pdf> [2013, July 8].

Milburn, K. A. 1995. A critical review of peer education with young people with special reference to sexual health. *Health Education Research*. 10(4): 407– 420.

Millstein, S.G., Peterson, A.C. & Nightingale, E.O. 1993. *Promoting the health of adolescents: new directions for the twenty-first century*. New York: Oxford University Press.

Minkler, M. & Wallerstein, N. 2002. Improving health through community organizing and community building. In *Health behavior and health education: theory, research and practice*. K. Glanz, B. Rimer & F. Lewis, Eds. 3rd ed. San Francisco: Jossey-Bass. 43-65.

Miranda, S. & Tarapanoff, K.M.A. 2008. *Information needs and information competencies: a case study of the off-site supervision of financial institutions in Brazil*. Available: <http://informationr.net/ir/13-2/paper344.html> [2009, March 23].

Misch, D.A. 2009. On-campus programs to support college students in recovery. *Journal of American College Health*. 58 (3): 279-280. Available: <http://dx.doi.org/10.1080/07448480903295375> [2013, March 9].

Mitchell, K., Nakamanya, S., Kamali, A. & Whitworth, J.A. 2001. Community-based HIV/AIDS education in rural Uganda: which channel is most effective? *Health Education Research*. 16(4): 411-23. Available: www.ncbi.nlm.nih.gov/pubmed/11525389 [2013, March 23].

Monahan, J.L. & Scheirer, M.A. 1988. The role of linking agents in the diffusion of health promotion programmes. *Health Education Quarterly*. 15(4): 417- 433.

Moore, E.W., Smith W.E. & Folsom A.R.B. 2012. F.O.R.E.play: the utility of brief sexual health interventions among college students. *Journal of American College Health*. 60(2): 175-177. Available: <http://dx.doi.org/10.1080/07448481.2011.584336> [2013, May 27].

Morris, J., Marzano, M., Dandy, N. & O'Brien, L. 2012. *Theories and models of behaviour and behaviour change*. Available:
[http://www.forestry.gov.uk/pdf/behaviour_review_theory.pdf/\\$file/behaviour_review_theory.pdf](http://www.forestry.gov.uk/pdf/behaviour_review_theory.pdf/$file/behaviour_review_theory.pdf) [2013, July 8].

Mowbray, C.T., Megivern, D., Mandiberg, J.M., Strauss, S., Stein, C.H., Kopels, S., Curlin, C. & Lett, R. 2006. Campus mental health services: recommendations for change. *American Journal of Orthopsychiatry*. 76(2): 226–37. Available:
<http://onlinelibrary.wiley.com/doi/10.1037/0002-9432.76.2.226/pdf> [2013, March 23].

Moyo, D. 2012. HIV and AIDS related stigma and discrimination. AIDS [Lecture]. National University of Science and Technology. 16 May.

Mufanechiya, T. & Mufanechiya, A. 2011. Motivating Zimbabwean secondary school students to learn: a challenge. *Journal of African Studies and Development*. 3(5): 96-104. Available: <http://www.academicjournals.org/JASD> [2012, March 2].

Mugo, F.W. 2010. *Sampling in research*. Available:
<http://www.answers.com/topic/sampling.html> [2013, July 13].

Mugo, S. 2002. *Introduction to social research: quantitative and qualitative approaches*. New Delhi: SAGE Publications.

Muhammad, F.J., Muhammad, A.K., Aijaz, A., Syeda, T.F. & Kamal, H. 2011. Paradigms and characteristics of a good qualitative research. *World Applied Sciences Journal*. 12 (11): 2082-2087. Available: <http://www.idosi.org/wasj/wasj12%2811%29/23.pdf> [2013, July 13].

Murphy, E., Dingwall, R., Greatbatch, D. & Parker, P. 1998. Qualitative research methods in health technology assessment: a review of the literature. *Health Technology Assessment* 2(16): 1-276. Available: <http://www.crd.york.ac.uk/crdweb/ShowRecord.asp?LinkFrom=OAI&ID=31999008347> [2013, July 13].

Murphy, E.M. 2005. Promoting healthy behaviour. *Health Bulletin* 2. Washington, DC: Population Reference Bureau.

Näslund, G.K. & Frederikson, M. 1993. Health behavior, knowledge and attitudes among Swedish university students. *Scandinavian Journal of Psychology*. 34(3): 197–211.

National Alliance on Mental Illness. 2012. *College students speak: a survey report on mental health*. Available: http://www.nami.org/Content/NavigationMenu/Find_Support/NAMI_on_Campus1/NAMI_Survey_on_College_Students/collegereport.pdf [2013, March 23].

National Centre for the Dissemination of Disability Research. 1996. *A review of the literature on dissemination and knowledge utilization*. Austin: Southwest Educational Development Laboratory. Available: www.tacimmunities.org [2013, March 23].

National Centre for the Dissemination of Disability Research. 2001. *Developing an effective dissemination plan*. Available: <http://www.researchutilization.org/matrix/resources/dedp/Dissemination.pdf> [2012, October 15].

National College Depression Partnership. 2013. *Supporting student learning by overcoming depression*. Available: http://www.nyu.edu/shc/about/college_depression_partnership.html. [2013, May 22].

National Institute of Cancer. nd. *Information Dissemination*. Available: <http://legislative.cancer.gov/files/information-dissemination.pdf> [2013, March 23].

National Statistical Service. nd. *Basic survey design: sample design*. Available. <http://www.nss.gov.au/nss/home.nsf/SurveyDesignDoc/B0D9A40C6B27487BCA2571AB002479FE?OpenDocument>

Neale, P., Thapa, S. & Boyce, C. 2006. *Preparing a case study: a guide for designing and conducting a case study for evaluation input*. Available: http://www2.pathfinder.org/site/DocServer/m_e_tool_series_case_study.pdf [2012, October 17].

Network for the Dissemination of Curriculum Infusion. 1999. *Characteristics of Successful Curriculum Infusion Programmes (monograph)*. Chicago IL: Network for the Dissemination of Curriculum Infusion. Available: www.neiu.edu/~cinfusi/success.htm [2013, March 23].

Neuman, W.L. 2000. *Social research methods*. London: Allan & Becon.

Neuman, W.L. 2006. *Social research methods: qualitative and quantitative approaches*. 6thed. Boston: Pearson Education.

Newman, S. & Vash, C. 1994. Gray matter: utilization of rehabilitation research results. *Rehabilitation Education*. 8(4): 380-385.

Nguyen, H.M. nd. *Help seeking behaviors of international students*. Available: http://www.grjsite.com/attachments/article/15/help_seeking_behavior_needs%201%20citation-1.pdf [2013, March 23].

Nicholas, D. 2000. *Assessing information needs: tools, techniques and concepts for the Internet Age*. 2nded. The Association for Information Management and Information Management International. London: Staple Hall,

Norton, W.E., Fisher, J.D., K., Amico, R., Dovidio, J.F. & Johnson, B. 2012. Relative efficacy of a pregnancy, Sexually Transmitted Infection, or Human Immunodeficiency Virus prevention–focused intervention on changing sexual risk behavior among young adults. *Journal of American College Health*. 60(8): 574-582. Available: <http://dx.doi.org/10.1080/07448481.2012.721428> [2013, March 7].

Nutbeam, D. & Blakey, V. 1990. The concept of health promotion and AIDS prevention: a comprehensive and integrated basis for action in the 1990s. *Health Promotion International*. 5(3): 233–242.

Nutbeam, D. 2000. Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International*. 15(3): 259-267.

Nwezeh, C.M.T. 2008. Health information needs of first-year students in Nigerian universities: a case study of Obafemi Awolowo University. Ile-Ife. *Journal of Hospital Librarianship*. 8(2): 201-210.

Nyamwaya, D. 1997. Health promotion practice: the need for an integrated and processual approach. *Health Promotion International*. 2(3): 179 – 181.

O'Donoghue, J. 1996. Zimbabwe's AIDS action programme for schools: a case study. *Promotion Education*. 3(2): 7-12.

O'Reilly, T. 2005. *What is Web 2.0: design patterns and business models for the next generation of software*. Available: <http://www.oreilly.com/lpt/a/6228> [2013, June 17].

Obermayer, J.L., Riley, W.T., Asif, O. & Jean-Mary, J. 2004. College smoking-cessation using cell phone text messaging. *Journal of American College Health*. 53(2): 71-78. Available: <http://dx.doi.org/10.3200/JACH.53.2.71-78> [2013, May 22].

O'Donnell, M. P. 2009. Definition of health promotion 2.0: embracing passion, enhancing motivation, recognizing dynamic balance, and creating opportunities. *American Journal of Health Promotion*. 24(1): iv-iv. Available: <http://www.healthpromotionjournal.com/> [2013, March 23].

Ohio State University Counselling and Consultation Service. 2013. *Creating the extraordinary student experience*. Available: <http://www.ccs.ohio-state.edu/staff-faculty/> [2013, May 7].

Olive, P. 2012. *The SAGE dictionary of social research methods: purposive sampling*. Available: <http://www.srmo.sagepub.com/view/the-sage-dictionary-of-social-research-methods/n162.xml> [2012, May 9].

Olsen, W. 2004. *Triangulation in social research: qualitative and quantitative methods can really be mixed*. Holborn, Ormskirk: Causeway Press.

Olson, K.K. & Autio, L.A. 1999. Assessing and planning primary care at college and university health Centres. *Holistic Nursing Practice*. 13(4): 1–8.

Ormandy, P. 2010. Defining information need in health - assimilating complex theories derived from information science. *Health Expect*. 14(1): 92-104. Available: <http://www.ncbi.nlm.nih.gov/pubmed/20550592> [2012, October 9].

Oso, W.Y. & Onen, D. 2008. *A general guide to writing research proposal and report: a handbook for beginning researchers*. 2nd ed. Kampala: Makerere University Printery.

Paisley, W. 1993. Knowledge utilization: the role of new communications technologies. *Journal of the American Society for Information Science*. 44(4): 222-234.

Parker, R. 1996. Empowerment, community mobilisation and social change in the face of HIV/AIDS. *AIDS*. 10(3): 27-31.

Parker, S.M., Clayton, J.M., Hancock, K., Walder, S., Butow, P.N., Carrick, S., Currow, D., Ghera, D., Glare, P., Hagerty, R., Tattersall, M.H.N. & Carrick, S. 2007. A systematic review of prognostic/end-of-life communication with adults in the advanced stages of a life-limiting illness: patient/caregiver preferences for the content, style and timing of information. *Journal of Pain and Symptom Management*. 34(1): 81–93.

Pasco, S., Wallack, C., Sartin, R.M. & Dayton, R. 2012. The impact of experiential exercises on communication and relational skills in a suicide prevention gatekeeper-training programme for college resident advisors. *Journal of American College Health*. 60(2): 134-140. Available: <http://dx.doi.org/10.1080/07448481.2011.623489> [2013, May 22].

Patton, M.Q. 2002. *Qualitative Research and Evaluation Methods*. Thousand Oaks,

Pearman, S.N. and Valois, R. 1997. The impact of a required college health and physical education course on the health status of alumni. *Journal of American College Health*. 46(2): 77–86. Available: <http://www.tandfonline.com/doi/pdf/10.1080/07448489709595591> [2013, May 7].

Peltzer, K. 2000. Factors affecting condom use among South African university students. *East African Medical Journal*. 77(1): 46-52. Available: <http://www.ajol.info/index.php/eamj/article/download/46384/32783> [2013, May 20].

Perry, C. L., Barnowski, T. & Parcel, G.S. 1990. How individuals, environments, and health behavior interact: social learning theory. In: Glanz, K., Lewis, F. M. and. Rimer, B.K. (Eds.), *Health Behavior and Health Education: Theory Research and Practice*. San Francisco, CA: Jossey-Bass. 180-193.

Petty, R. & Cacioppo, J. 1986. *Communication and persuasion: central and peripheral routes to attitude change*. New York: Springer Verlag.

Picklesimer, B.K. & Miller, T.K. 1998. Life-skills development inventory-college form: an assessment measure. *Journal of College Student Development*. 39(1): 100-110. Available: <http://www.sprc.org/collegesanduniversities/developing-campus-programme/comprehensive-approach/develop-life-skills> [2013, March 22].

Pilcher, J.J. & Walters, A.S. 1997. How sleep deprivation affects psychological variables related to college students' cognitive performance. *Journal of American College Health*. 46(3): 121-126. Available: <http://dx.doi.org/10.1080/07448489709595597> [2013, March 21].

Potter, S.J. & Perry, B. 2008. *Incorporating evaluation into media campaign design*. Harrisburg, PA: National Online Resource Centre on Violence against Women (VAWnet). Available: [http://www.vawnet.org/AssocFilesVAWnet/AR EvalMediaCampaign.pdf](http://www.vawnet.org/AssocFilesVAWnet/AR_EvalMediaCampaign.pdf) [2013, June 8].

Power, R. & Hunter, G. 2001. Developing a strategy for community-based health promotion targeting homeless populations. *Health Education Research*. 16(5): 593-602. Available: <http://www.ncbi.nlm.nih.gov/pubmed/11675806> [2013, March 23].

Prochaska, J. & DiClemente, C. 1983. Stages and processes of self-change of smoking: toward an integrative model of change. *Journal of Consulting and Clinical Psychology*. 51(3): 390-395.

Public Health Ontario. 2012. *Evaluating health promotion programs*. Available: http://www.publichealthontario.ca/en/eRepository/Evaluating_health_promotion_programs_2012.pdf. [2014, October 06].

Radhu, N., Daskalakis, Z.J., Arpin-Cribbie, C.A., Irvine J.D. & Ritvo, P. 2012. Evaluating a web-based cognitive-behavioural therapy for maladaptive perfectionism in university students. *Journal of American College Health*. 60(5): 357-366. Available: <http://dx.doi.org/10.1080/07448481.2011.630703> [2013, May 21].

Radhu, N., Daskalakis, Z.J., Arpin-Cribbie, C.A., Irvine J.D. & Ritvo, P. 2012. Evaluating a web-based cognitive-behavioural therapy for maladaptive perfectionism in university students.

RAND Corporation. 2004. *Getting to outcomes™ 2004: promoting accountability through methods and tools for planning, implementation, and evaluation*. Available: http://www.rand.org/content/dam/rand/pubs/technical_reports/2004/RAND_TR101.pdf. [2014, October 06].

Randolph, W. & Viswanath, K. 2004. Lessons learned from public health mass media campaigns: marketing health in a crowded media world. *Annual Review of Public Health*. 25(1): 419–437.

Rees, C.E. & Bath, P.A. 2001. Information-seeking behaviours of women with breast cancer. *Oncology Nursing Forum*. 28(5): 899–907.

Reingle, J., Thombs, D.L., Weiler, R.M., Dodd, V.J., O'Mara, R. & Pokorny, S.B. 2009. An exploratory study of bar and nightclub expectancies. *Journal of American College Health*. 57(6): 629–638.

Repak, N. 2013. *Emotional fatigue: coping with academic pressure*. Available: http://www.gradresources.org/articles/emotional_fatigue.shtml [2013, March 21].

Riley, W., Obermayer, J.L. & Jean-Mary, J. 2008. Internet and mobile phone text messaging intervention for college smokers. *Journal of American College Health*. 57(2): 245-248. Available: <http://dx.doi.org/10.3200/JACH.57.2.245-248> [2013, May 22].

Robertson, R. 2008. *Using information to promote healthy behaviours*. London: King's Fund.

Rogers, E.M. 2003. *Diffusion of innovations*. 5th ed. New York: Free Press.

Rosenstock, I.M. 1966. Why people use health services. *The Milbank Quarterly*. 44(3): 94–123.

Rosenthal, B. & Wilson, C. 2008. Mental health services: use and disparity among diverse college students. *Journal of American College Health*. 57(1): 61-68. Available: <http://dx.doi.org/10.3200/JACH.57.1.61-68> [2013, March 23].

Ross, M. & Williams, M. 2002. Effective targeted and community HIV/STD prevention programs. *Journal of Sexual Research*. 39(1): 58-62.

Ross, M. 1955. *Community organisation: theory and principles*. New York: Harper.

Rowe, L.S., Jouriles, E.N., McDonald, R., Platt, C.G. & Gomez, G.S. 2012. Enhancing women's resistance to sexual coercion: a randomized controlled trial of the DATE Programme. *Journal of American College Health*. 60(3): 211-218. Available: <http://dx.doi.org/10.1080/07448481.2011.587068> [2013, March 23].

Rowlands, I. & Nicholas, D. 2007. *Information behaviour of the researcher of the future: a British Library/JISC Study: The Literature on Young People and their Information Behaviour: Work Package II*. Available: www.jisccollections.ac.uk/media/documents/programmes/reppres/ggworkpackageii.pdf [2010, February 23].

Royal College of Psychiatrists. 2011. *Mental health of students in higher education: college report*. Available: <http://www.rcpsych.ac.uk/files/pdfversion/cr166.pdf> [2013, March 23].

Rushkoff, D. 2005. Get back in the box: innovation from the inside out. Available: <http://rushkoff.com/2005/08/> [2012, May 10].

Rutten, L.J.F., Arora, N.K., Bakos, A.D., Aziz, N. & Rowland, J. 2005. Information needs and sources of information among cancer patients: a systematic review of research (1980–2003). *Patient Education and Counseling*. 57(3): 250–261.

Ryan, R. & Gross, N. 1943. The diffusion of hybrid seed corn in two Iowa communities. *Rural Sociology*. 8(1): 15–24.

Sangl, J.A. & Wolf, L.F. 1996. Role of consumer information in today's health care system. *Health Care Financing Review*. 18(1): 1–8.

Saunders, M., Lewis, P. & Thornhill, A. 2000. *Research methods for business students*. Prentice Hall: London.

Saunders, M., Lewis, P. & Thornhill, A. 2007. *Research methods for business students*. 4th ed. Harlow: Prentice Hall.

Saunders, M., Lewis, P. and Thornhill, A. 2009. *Research methods for business students*. 5th ed. Harlow: Pearson Education Limited

Savadye, B. 2011. Lack of youth friendly services in Zimbabwe: “I was just waiting to raise enough money to go to a clinic outside”. *Bulletin of Medicus Mundi Switzerland*. 121. Available: www.medicusmundi.ch/mms/services/bulletin/hiv-sexuality-and-youth-linking-hiv-and-reproductive-health-and-rights/chances-and-challenges-of-linking-hiv-and-srhr-case-studies/201ci-was-just-waiting-to-raise-enough-money.html [2012, May 25].

Savolainen, R. 1995. Everyday life information seeking: approaching information seeking in the context of “Way of Life”. *Library & Information Science Research*. 17(3): 259–294.

Schafer, M.S. 2014. *Writing the discussion*. Available: http://web.clas.ufl.edu/users/msscha/psych/report_discussion.html [2014, May 25].

Schwandt, T.A. 2003. Three epistemological stances for qualitative inquiry: Interpretativism, hermeneutics and social constructionism. In *The Landscape of Qualitative Research: Theories and issues*. N. Denzin & Y. Lincoln. Eds. Thousand Oaks, CA: Sage. 292-331.

Sechrest, L., Backer, T.E. & Rogers, E.M. 1994. Synthesis of ideas for effective dissemination. In *Effective dissemination of clinical and health information: conference summary*. L. Sechrest, T. E. Backer, E.M. Rogers, T.F. Campbell & M. L. Grady, Eds. AHCPR Publication. Rockville, MD: Agency for Health Care Policy and Research. 187-196

Seitz, C.M., Strack, R.W., Rice, R.R., Moore, E., DuVall, T. & Wyrick, D.L. 2012. Using the photovoice method to advocate for change to a campus smoking policy. *Journal of American College Health*. 60(7): 537-540. Available: <http://dx.doi.org/10.1080/07448481.2012.688781> [2013, May 22].

Seymour, A. 2004. *Focus groups: an important tool for strategic planning*. Available: http://www.justicesolutions.org/art_pub_focus_groups.pdf [2014, January 23].

Shalin, H. 2009. *The making of the university Life Café: promoting students emotional health*. Available: <http://www.educause.edu/ero/article/university-life-caf%C3%A9-promoting-students%E2%80%99-emotional-health> [2012, June 21].

Sharkin, B. 2004. College counseling and student retention: research findings and implications for counseling centres. *Journal of College Counseling*. 7(2): 99–108.

Sharma, M. & Romas, J. A. 2012. *Theoretical foundations of health education and health promotion*. 2nd ed. Sudbury, MA: Jones and Bartlett.

Shive, S. & Neyman, M.M. 2006. Evaluation of the energize your life!:social marketing campaign pilot study to increase fruit intake among community college students. *Journal of American College Health*. 55(1): 33–39.

Shuttleworth, M. 2008. *Case study research design*. Available: <http://www.experiment-resources.com/case-study-research-design.html> [2012, June 21].

Sieben, L. 2011. College freshmen report record-low levels of emotional health. *The Chronicle of Higher Education*. University of Phoenix. Available: <http://chronicle.com/article/College-Freshmen-Report/126068/> [2012, May 21].

Simalane, N.O. 2001. *Sexual harassment: a case of the University of Natal, South Africa*. FAWE: Nairobi

Smart, D. 2006. *Smart Internet 2010 – social networks*. Available: <http://www.smartInternet.com.au/ArticleDocuments/121/Social-Networks-2010.pdf.aspx> [2013, June 17].

Souza, D. 2009. Evidence-based approach to decision making: the inclusion of GIS as part of Ghana's health information systems. *Ghana Medical Journal* 43(1): 1–6. Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2709165> [2010, January 26].

Spring, H. 2010. Health professionals of the future: teaching information skills to the Google generation. *Health Information and Libraries Journal*. 27(2): 158–162. Available: <http://onlinelibrary.wiley.com/doi/10.1111/j.1471-1842.2010.00885.x/pdf> [2013, March 23].

Steyn, B. & Nunes, M. 2001. Communication strategy for community development: a case study of the Heifer project-South Africa. *Communication*. 27(2): 29-48.

Stock, C., Wille, L. & Krämer, A. 2001. Gender-specific health behaviors of German university students predict the interest in campus health promotion. *Health Promotion International*. 16(2): 145–154.

Sturges, P. 2011. The cell phone in Africa: understanding and interpreting responses to technology in Library and Information Science in Southern Africa. *Proceedings of the Progress in Library and Information Science in Southern Africa (PROLISSA) Sixth biennial DISSAnet Conference* 9-11 March 2011. Pretoria: University of South Africa (UNISA). 143 – 152.

Suddaby, R. 2006. From the editors: what grounded theory is not. *Academy of Management Journal*. 49(4): 633–42.

Sun, W.Y., Sangweni, B., Chen, J. & Cheung, S. 1999. Effects of a community-based nutrition education program on the dietary behavior of Chinese-American college students. *Health Promotion International*. 14(3): 241–250.

Svanstrom, L. 1999. The evidence of health promotion effectiveness: shaping public health in a new Europe. *Oxford Journals*. 15(2): 233-235. Available: <http://her.oxfordjournals.org/content/15/2/233.full> [2012, June 25].

Svenson, L., Carmel, S. & Varnhagen, C.K. 1997. A review of the knowledge, attitudes and behaviours of university students concerning HIV/AIDS. *Health Promotion International*. 12(1): 61-68. Available: <http://heapro.oxfordjournals.org/> [2013, March 23].

Taliaferro, L.A., Rienzo, B.A., Pigg, R.M., Miller, M. & Dodd, V.J. 2009. Spiritual well-being and suicidal ideation among college students. *Journal of American College Health*. 58(1): 83-90. Available: <http://dx.doi.org/10.3200/JACH.58.1.83-90> [2013, March 23].

Tarhule, A.A. 2005. Climate information for development: an integrated dissemination model. *Proceedings of the 11th General Assembly of the Council for the Development of Social Science Research in Africa (CODESRIA) Conference* 06-10 December 2005. Maputo. Available: <http://www.codesria.org/IMG/pdf/tarhule.pdf> [2013, June 17].

Tashakkori, A. & Teddlie, C. 2003. *Handbook of mixed methods in social and behavioural research*. Thousand Oaks, CA: Sage.

Terry, P.E., Masvaure., T.B. & Gavin, L. 2005. HIV/AIDS health literacy in Zimbabwe--focus group findings from university students. *Methods of Information in Medicine*. 44(2): 288-92.

Thackeray, R., Neiger, B.L., Hanson C.L. & McKenzieJ.F. 2008. Enhancing promotional strategies within social marketing programmes: use of Web 2.0 social media. *Health Promotion Practice*. 9(4): 338-343. Available: <http://www.uk.sagepub.com/chaston/Chaston%20Web%20readings%20chapters%201-12/Chapter%209%20-%2031%20Thackeray%20et%20al.pdf> [2013June 17].

Thornberg, R. 2012. Informed grounded theory. *Scandinavian Journal of Educational Research*. 56(3): 243-259.

Thurber, C.A. & Walton, E.A. 2012. Homesickness and adjustment in university students. *Journal of American College Health*. 60(5): 415-419. Available: <http://dx.doi.org/10.1080/07448481.2012.673520> [2013, March 21].

Thurmond, A. V. 2001. The point of triangulation. *Journal of Nursing Scholarship*. 33 (3): 253-258.

Tichapondwa, S.M. 2013. *Preparing your dissertation at a distance: a research guide*. Available: http://www.sadc.int/files/3713/7821/2867/Dissertation_PDF.pdf [2013 June 17].

Timmins, F. 2006. Exploring the concept of information need. *International Journal of Nursing Practice*. 12(6): 375–381. Available: <http://onlinelibrary.wiley.com/doi/10.1111/j.1440-172X.2006.00597.x/full> [2013 June 17].

Tjia, J., Givens, J.L. & Shea, J.A. 2005. Factors associated with under-treatment of medical student depression. *Journal of American College Health*. 53(5): 219–24. Available: www.ncbi.nlm.nih.gov/pubmed/15813232 [2013, March 23].

Tobin, G.A. & Begley, C.M. 2004. Methodological rigour within a qualitative framework. *Journal of Advanced Nursing*. 48(4): 388-396.

Tones, K., Tilford, S. & Robinson, Y. 1990. *Health education: effectiveness and efficiency*. London: Chapman and Hall.

Trochim. 2006. *Introduction to Evaluation*. Available: <http://www.socialresearchmethods.net/kb/intreval.htm>. [2014, October 06].

Tsouros, A.D. 1998. *From the healthy city to the healthy university: project development and networking*. Copenhagen: World Health Organisation, Regional Office for Europe. Available: <http://dx.doi.org/10.1080/07448480903221244> [2014, September 26].

Turner, J., Perkins, H.W. & Bauerle, J. 2008. Declining negative consequences related to alcohol misuse among students exposed to a social norms marketing intervention on a college campus. *Journal of American College Health*. 57(1): 85–94. Available: <http://dx.doi.org/10.3200/JACH.55.1.33-40> [2013, June 15].

Tydén, T., Björkelund, C., Odland, V., Olsson, S.E. & Strand, A. 1994. Effects of specially tailored information on Swedish university students' sexual behaviour. *Journal of American College Health*. 43(2): 75-79.

United Kingdom, Department of Health. 2004. *Choosing Health: Making healthy Choices Easier*. London: The Stationery Office.

United Nations Children's Fund (UNICEF). 2000. Defining quality in education. *Proceedings of the International Working Group on Education Florence*. June 2000. Italy. Available: www.unicef.org/.../QualityEducation.pdf [2012, June 21].

United Nations Department of Public Information. 1948. *The Universal Declaration of Human Rights*. Available: www.ohchr.org/en/udhr/pages/language.aspx?langid=eng [2012, June 21].

United Nations Population Fund. 2011. *Promoting gender equality and protection of women's rights*. Available: <http://countryoffice.unfpa.org/zimbabwe/2010/11/20/2892/gender/> [2014, October 06].

United States Department of Health and Human Services. 2008. *Promoting mental health and preventing suicide in college and university settings*. Suicide Prevention Resource Centre (SPRC). Available: www.sprc.org/library/college_sp_white_paper.pdf [2012, March 7].

United States National Institute of Mental Health. 2003. *Depression and college students: what do these students have in common?* Available:
<http://uhs.berkeley.edu//home/healthed/depressedstudents.pdf> [2012, June 21].

Universal Accreditation Board. 2003. *Table for determining random sample size from a given population.* Available:
<http://www.praccreditation.org/secure/documents/coachHO16.pdf&bt=Table-for-Determining-Random-Sample-Size-from-a-Given-Population> [2012, June 21].

University of California Berkeley. 2013. *Health promotion services.* Available:
<http://uhs.berkeley.edu/students/healthpromotion/> [2013, March 23].

University of California. 2006. *Student mental health committee: final report.* Oakland, CA: University of California.

University of Lethbridge Library. 2012. *Primary vs. secondary materials.* Available:
<http://www.uleth.ca/lib/guides/research/display.asp?PageID=29> [2012, October 17].

University of Maryland Counseling Centre. 2013. Helping students in distress a faculty & staff guide for assisting students in need. Available: <http://www.cte.umd.edu/HSID.pdf> [2013, May 7].

University of Princeton. 2013. *University health services.* Available:
<http://www.princeton.edu/uhs/> [2013, May 7].

University of Winscom. 2012. *The writer's handbook*. Available:
<http://writing.wisc.edu/Handbook/ReviewofLiterature.html> [2012, February 20].

Van der Molen, B. 1999. Relating information needs to the cancer experience: information as the key coping strategy. *European Journal of Cancer Care*. 8(4): 238–244.

Vaughn, J.A. 2012. Special suicide and suicide prevention section of the Journal of American College Health. *Journal of American College Health*. 60(2): 101-102. Available:
<http://dx.doi.org/10.1080/07448481.2011.645928> [2013, March 23].

Vázquez, F.L., MRes, P.O. & Díaz.O. 2012. Psychological distress and related factors in female college students. *Journal of American College Health*. 60(3): 219-225. Available:
<http://dx.doi.org/10.1080/07448481.2011.587485> [2013, March 21].

Von Glasersfeld, E. 1995. *A constructivist approach to teaching*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Walsh, M.M., Hilton, J.F., Masouredis, C.M., Gee, L., Chesney, M.A. & Ernster, V.L. 1999. Smokeless tobacco cessation intervention for college athletes: results after 1 year. *American Journal of Public Health*. 89(2): 228–234. Available:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1508522/> [2012, February 20].

Wang, C. & Burris, M. 1994. Empowerment through photonovella: portraits of participation. *Health Education Quarterly*. 21(47): 171–186.

Wardle, J. & Steptoe, A. 1991. The European health and behaviour survey: rationale, methods and initial results from the United Kingdom. *Social Science and Medicine*. 33(8): 925–936.

Westbrook, J. & Lumbley, J. 1990. Consumer-driven supported employment: a way to improve supported employment services and outcomes. *Bulletin of the National Model for Supported Employment and Independent Living*. Austin: Southwest Educational Development Laboratory.

White, S., Park, Y.S. & Cordero, E.D. 2010. Impact of curriculum infusion on college students' drinking behaviors. *Journal of American College Health*. 58(6): 515-522. Available: <http://dx.doi.org/10.1080/07448481003621726> [2013, May 7].

White, S., Park, Y.S., Israel, T. & Cordero, E.D. 2009. Longitudinal evaluation of peer health education on a college campus: impact on health behaviors. *Journal of American College Health*. 57(5): 497-506. Available: <http://dx.doi.org/10.3200/JACH.57.5.497-506> [2013, May 20].

Wildemuth, B.M. & Hughes, A. 2005. Perspectives on the tasks in which information behaviors are embedded. In *Theories of Information Behavior*. K.E. Fisher, S. Elderez & L.E.F. McKechnie, Eds. American Society of Information Science and Technology Monograph Series. Medford, NJ: Information Today Inc. 275–279.

Wiles, R., Crow, G., Heath, S. & Charles, V. 2006. Anonymity and confidentiality. *Proceedings of the conference the ESRC Research Methods Festival*. July 2006. Oxford. 1-17. Available: http://eprints.ncrm.ac.uk/423/1/0206_anonymity%2520and%2520confidentiality.pdf [2012, June 22].

Williams, J. & Leherr, K. 1998. Children's health and nutrition as educational issues: a case study of the Ghana Partnership for Child Development's intervention research in the Volta region of Ghana. *Technical Paper No. 91, December, 1998*. Washington, D.C: USAID.

Wilson, T.D. & Walsh, C. 1996. *Information behaviour: an interdisciplinary perspective*. Sheffield: University of Sheffield, Department of Information Studies.

Wilson, T.D. 1981. On user studies and information needs. *Journal of Documentation*. 37(1): 3-15.

Wilson, T.D. 1999. Models in information behavior research. *Journal of Documentation*. 55(3): 249-270. Available: <http://informationr.net/tdw/publ/papers/1999JDoc.html> [2012, October 15].

Wilson, T.D. 1999. Models in information behaviour research. *Journal of Documentation*. 55(3): 249-270.

Wilson, T.D. 2000. Human information behavior. *Informing Science*. 3(2): 49-55. Available: <http://inform.nu/Articles/Vol3/v3n2p49-56.pdf> [2012, October 15].

Wilson, T.D. 2002. *Phenomenology and research methodology for information behavior research*. *New Review of Information Behaviour Research*. 3(2): 71-81. Available at: <http://informationr.net/tdw/publ/papers/schutz02.html> [2012, October 15].

Workgroup for Community Health and Development. n.d. *Developing an action plan*. Available: http://ctb.ku.edu/en/tablecontents/sub_section_main_1089.aspx [2012, February 20].

World Bank. 2011. *Information dissemination*. Available: <http://web.worldbank.org> [2013, March 23].

World Bank. nd. *Theories of behavior change*. Available: <http://siteresources.worldbank.org/EXTGOVACC/Resources/BehaviorChangeweb.pdf> [2012, July 8].

World Health Organisation (WHO). 1986. Ottawa Charter for health promotion. *Health Promotion*. 1(4): iii-v.

World Health Organisation (WHO). 1998. *Health promoting universities concept: experience and framework for action*. Available: www.euro.who.int/document/e60163.pdf [2012, June 25].

World Health Organisation (WHO). 2003. *WHO definition of hHealth*. Available: <http://www.who.int/about/definition/en/print.html> [2013, October 21].

World Health Organisation (WHO). 2005. *The 6th Global Conference on Health Promotion*. Bangkok, 11 August 2005. Bangkok: World Health Organisation. Available: http://www.who.int/healthpromotion/conferences/6gchp/hpr_050829_%20BCHP.pdf [2012, July 31].

World Health Organisation (WHO). 2013. *Health promotion*. Available: http://www.who.int/topics/health_promotion/en/ [2012, July 29].

World Health Organisation. 2009. *Milestones in Health Promotion: statements from Global Conferences*. Available:

http://www.who.int/healthpromotion/Milestones_Health_Promotion_05022010.pdf. [2014, October 06].

Wyk, B. & Pieterse, J. 2006. *Institutional responses to HIV/AIDS from institutions of higher education in the Southern African Development Community: a report commissioned by the Southern African Regional Universities Association*. Available:

http://www.sarua.org/files/publications/SARUA_HEI_HIV_AIDS_Study.pdf [2012, June 19].

Xiangyang, T., Lan, Z., Xueping, M., Tao, Z., Yuzhen, S. & Jagusztyn, M. 2003. Beijing health promoting universities: practice and evaluation. *Health Promotion International*. 8(2): 107-113.

Yesus, D.G. & Fantahun, M. 2010. Assessing communication on sexual and reproductive health issues among high school students with their parents. *Ethiopian Journal of Health Development*. 24(2): 89-95. Available: <http://ejhd.uib.no/ejhd-v24-n2/89%20Assessing%20communication%20on%20sexual%20and%20reproductive%20health.pdf> [2013, March 23].

Yin, R.K. 2003. *Case study research: design and methods*. 3rd ed. Thousand Oaks, CA: Sage.

Zhang, P. & Benjamin, R.I. 2007. Understanding information related fields: a conceptual framework. *Journal of the American Society for Information Science and Technology*. 58(13): 1934–1947. Available: <http://onlinelibrary.wiley.com/doi/10.1002/asi.20660/pdf> [2013, May 17].

Zimbabwe Community Radio. 2010. *STI outbreak at NUST: students blame institution*. Available: http://zicora.com/index.php?option=com_content&view=article&id=589:sti-outbreak-at-nust-students-blame-institution&catid=18:bulawayo&itemid=27 [2012, June 21].

Zimbabwe National Statistics Agency. 2011. *Zimbabwe Demographic and Health Survey 2010-11: preliminary report*. Available: <http://www.measuredhs.com/pubs/pdf/FR254/FR254.pdf> [2012, June 21].

Zindi, F. 1994. Sexual harassment in Zimbabwe's institutions of higher education. *Zambezia*.xxi (ii): 177 -185.

Zullig, K.J., Reger-Nash, B. & Valois R.F. 2012. Health educator believability and college student self-rated health. *Journal of American College Health*. 60(4): 296-302. Available: <http://dx.doi.org/10.1080/07448481.2011.604368> [2013, March 23].



Appendix A: Questionnaire for Students

UNIVERSITY OF CAPE TOWN, LIBRARY AND INFORMATION STUDIES CENTRE, CAPE TOWN

Informed Consent letter

Researcher: Thomas Matingwina

Supervisor: A/Prof. J. Raju

Institution: University of Cape Town

Institution: University of Cape Town

Cell: 00263773240911

Phone number: 021-6503091

E-mail: tmatingwina@gmail.com

E-mail: jaya.raju@uct.ac.za

I kindly invite you to participate in a study on developing a framework for disseminating accurate health information to undergraduate students at the National University of Science and Technology, Zimbabwe. The study is undertaken as part of the requirements of a PhD being undertaken at the University of Cape Town Library and Information Studies Centre. I am interested in your experiences and suggestions pertaining to health information provision at NUST. This is an opportunity to provide useful feedback that would assist in the development of a user-driven solution to health problems that face students.

I would like to emphasize that your participation in this study is voluntary and that all efforts will be made to protect your identity and to keep the information provided confidential. Please feel free to ask questions regarding this study. You may contact me if you have any additional questions on the details provided above.

Your signature indicates that you have read the information provided above and that you have decided to participate. You may withdraw at any time without prejudice after signing this form should you choose to discontinue participation in this study. It should take you approximately 15 minutes to complete the questionnaire.

Thank you for your participation.

Signature

Date

Participant's Signature

Date

Questionnaire number.....

Questionnaire for Undergraduate Students at the National University of Science and Technology

Please tick in the appropriate box(es) and provide further explanation where necessary.

DEMOGRAPHIC CHARACTERISTICS

No.	Questions	Coding Categories		
Q1	Age:	<i>1</i>	20 and below	
		<i>2</i>	21-25	
		<i>3</i>	26-30	
		<i>4</i>	31 and above	
Q2	Gender:	<i>1</i>	Male	
		<i>2</i>	Female	
		<i>3</i>	Other	
Q3	Faculty	<i>1</i>	Faculty of Applied Sciences	
		<i>2</i>	Faculty of the Built Environment	
		<i>3</i>	Faculty of Commerce	
		<i>4</i>	Faculty of Communication and Information Science	
		<i>5</i>	Faculty of Industrial Technology	
Q4	Programme	<i>1</i>	Conventional	
		<i>2</i>	Parallel	
		<i>3</i>	Block release	

HEALTH INFORMATION NEEDS OF STUDENTS

USER

Q5 How would you describe your general health?

Excellent	[]	Very good	[]
Good	[]	Poor	[]
Do not know	[]		

Q6 Are you interested in receiving health information on the following topics?					
<i>Coding</i>	<i>1</i>	<i>2</i>		<i>1</i>	<i>2</i>
	Yes	No		Yes	No
Stress reduction			Injury prevention		
Suicide prevention			Nutrition		
HIV and AIDS and STI prevention			Physical activity		
Sleeping difficulty			Pregnancy prevention		
Alcohol & other drug use			Accommodation		
Cold/Flu/Sore throat			Problems associated with Internet/computer games		
Depression and anxiety			Relationship difficulties		
Eating disorders			Sexual assault/ relationship violence		
Grief and loss			Tobacco use		
How to help others in distress			Violence prevention		
Access to health facilities			Access to medical insurance cover		

If you wish to receive health information on other topics not listed, please specify.....

Q7 Please rate your critical life skills below:					
Coding		1	2	3	4
		Poor	Average	Good	Excellent
A. Problem solving and decision making	Assessing and analysing information				
	Identifying and solving problems				
	Setting goals				
	Managing time				
	Resolving conflicts				
B. Identity development	Developing awareness of personal and emotional identity				
	Maintaining self esteem				
	Clarifying values				
	Developing meaning of life				
C. Interpersonal communication	Establishing relationships				
	Participation in community activities				
	Managing interpersonal intimacy				
	Articulating clear expression of thought				
D. Health maintenance	Nutritional control				
	Weight control				
	Physical fitness				
	Selection of leisure activities				
	Understanding sexuality				

Q8 Please rate your overall health information literacy skills below:				
<i>Coding</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
	Poor	Average	Good	Excellent
Searching for health information				
Understanding health information				
Evaluating health information				
Using health information				

SOURCE

Q9 Which information sources would you prefer to consult for your health information needs?

Community health educators	[]	Student Counselor	[]
Teaching staff	[]	Nursing Sister	[]
NUST website	[]	My Peers	[]
Other	[]		

If other, Please specify.....

Q10 Which information format would you prefer for accessing or receiving health information?

Print	[]	Electronic	[]
Audio	[]	Video	[]

MEDIUM

Q11 Which information channels/media would you prefer for receiving health information?

NUST website	[]	Cellphone	[]
Printouts (posters, brochures, etc.)	[]	Workshops	[]
Health related courses	[]	Face-to-face	[]
Social networking sites (e.g. Facebook)	[]	E-mail	[]

If other, Please specify.....

EVALUATION

USER

Q12 Have you received any health information from NUST?

Yes [] No []

If your answer is no, please proceed to Q17

Q13 Which sources have you used in accessing or receiving health information at NUST?

Student counselling service	[]	Nursing Sister	[]
Departmental counselling	[]	Peers	[]
NUST website	[]	Other	[]

If other, Please specify.....

Q14 Have you received information on the following topics from NUST?					
<i>Coding</i>	<i>1</i>	<i>2</i>		<i>1</i>	<i>2</i>
	Yes	No		Yes	No
Stress reduction			Injury prevention		
Suicide prevention			Nutrition		
HIV and AIDS and STI prevention			Physical activity		
Sleeping difficulty			Pregnancy prevention		
Alcohol & other drug use			Accommodation		
Cold/Flu/Sore throat			Problems associated with Internet/computer games		
Depression and anxiety			Relationship difficulties		
Eating disorders			Sexual assault/ relationship violence		
Grief and loss			Tobacco use		
How to help others in distress			Violence prevention		
Access to health facilities			Access to medical insurance cover		

If other, Please specify.....

SOURCE				
Q15 Please rate the health information sources available at NUST in terms of the variables below:				
<i>Coding</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
	Poor	Average	Good	Excellent
Accessibility				
Trustworthiness				
Competence				
Experience				
Sensitivity to user concerns				

CONTENT				
Q16 Please rate the content of the health information received from NUST in terms of the variables below:				
<i>Coding</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
	Poor	Average	Good	Excellent
Accuracy				
Comprehensiveness				
Relevance				
Simplicity				
Cost effectiveness				

MEDIUM

Q17 Are you aware of the existing health information dissemination channels/media used by NUST to provide health information to students?

Yes ☐ No ☐

Q18 From which channels/media have you received health information from NUST?

NUST website	<input type="checkbox"/>	Cell phone	<input type="checkbox"/>
Printouts (posters, brochures, etc.)	<input type="checkbox"/>	Workshops	<input type="checkbox"/>
Health related courses	<input type="checkbox"/>	Face-to-face	<input type="checkbox"/>
Social networking sites (e.g. Facebook)	<input type="checkbox"/>	E-mail	<input type="checkbox"/>

If other, Please specify.....

Q19 Please rate the medium or channels/media that NUST is using to convey health information to students in terms of the variables below:				
<i>Coding</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
	Poor	Average	Good	Excellent
Capacity to reach intended audience				
Accessibility and ease of use, user friendliness				
Timeliness				
Reliability				
Flexibility				
Cost effectiveness				
Clarity and attractiveness of the information 'package'				

INFORMATION DISSEMINATION PRINCIPLES AND PROCEDURES

Please specify the information dissemination principles and procedures below using the scoring below; please tick in the appropriate box.

Strongly disagree	=	1	Disagree	=	2
Neutral	=	3	Agree	=	4
Strongly agree	=	5			

No.	Information dissemination principles and procedures	1	2	3	4	5
Q20	Health information dissemination at NUST should be prevention-focused so that students can prevent diseases					
Q21	Health information dissemination at NUST should be two-way to allow me to voice my concerns					
Q22	Students should be consulted and involved during the development and implementation of health information dissemination systems at NUST					
Q23	The health information dissemination system should use a variety of information methods to distribute health information to students					
Q24	NUST should disseminate a variety of health topics to students, instead of isolated topics such as HIV and AIDS					
Q25	The health information dissemination system should be integrated, instead of isolated programmes targeting specific diseases.					
Q26	NUST should focus its health information dissemination efforts towards the development of students' life skills so that students can be in control of their health					
Q27	NUST should formulate a policy for effective dissemination of health information to student					
Q28	The information dissemination system should use and synchronise different Information and Communication Technologies (ICTs) for easier access to health information					
Q29	A system for disseminating health information should be implemented immediately					

.....END.....

Thank you very much for your time

Appendix B: Focus Group Schedule for Students

Interview Guide for Focus Group with NUST Students: Health information dissemination among undergraduate students in Zimbabwe with particular reference to the National University of Science and Technology: a study in developing an integrated framework for health information dissemination.

General Information

Date (dd/mm/yy) ____/____/____ Start time ____ am/pm

Facilitator's Name:

Last_____, First_____

Note taker's Name:

Last_____, First_____

Note taker's Name:

Last_____, First_____

Venue_____

Consent

My name is Thomas Matingwina; I am working on a study aimed at developing an integrated framework for disseminating health information to undergraduate students. The study is undertaken as part of the requirements of a PhD being undertaken at the University of Cape Town.

You will not be contacted in the future. I will not ask you for your name. Your responses are confidential and cannot be linked back to you. I wish to record the discussion and the information will be used for research purposes only; however, you are free to raise any objections regarding this. Some people feel anxious or embarrassed when asked questions on health matters. Your participation is completely voluntary, and you may decline to answer any specific question or completely refuse to participate. The discussion will take up to 60 minutes. I would greatly appreciate your participation in responding to these questions, even though I am not able to financially compensate you. You may not personally or immediately benefit from this assessment, but the results may be used to improve health promotion services for all students at NUST.

Introduction: In the light of a myriad of health problems that affect university students the world over, universities have been encouraged to be more pro-active in promoting health amongst students. Research has proven that information-based programmes are cost effective and have a great potential in addressing students' health information needs. As stated earlier, I am conducting a study that is aimed at developing an integrated framework for the dissemination of accurate health information to the student population. This study is aimed at supporting a systematic approach in developing and implementing future health promotion programmes that have the student in mind. This focus group offers you an opportunity to participate in the development and implementation of information-based health promotion programmes at NUST. Therefore, your input is of paramount importance.

Purpose: The purpose of this discussion is to gather information that will assist in the development of a needs-based health information dissemination framework. The discussion will cover students' health information needs; their perceptions on existing health information dissemination strategies at NUST; and students' preferences in terms of health information sources, content, and channels or media that should be used to convey health information. Hopefully, the information that you provide will be used to improve the quality and use of health promotion services at NUST.

Problem Identification

University students are faced with many health problems. Access to accurate information has proved to be effective in addressing and preventing these health problems. It also allows students to acquire critical life skills that would enable them to be in control of their health. Research has revealed that healthier students tend to perform better in their studies and are likely to be more successful academically than less healthy students. Therefore, the World Health Organisation, among other health institutions has called upon universities to be proactive in addressing health problems that affect the student population. There has been a shift from focusing on addressing specific diseases towards achieving wellness. So today, I would like to hear your views about how we can go about developing a needs-based information dissemination framework for the dissemination of accurate health information to students. I hope not to keep you too long, and I appreciate your time and effort in participating in this discussion. I selected you for participation at random because as students you are key stakeholders who should be consulted when developing programmes that affect you.

Developing an information dissemination framework is a systematic process which follows certain procedures and is guided by certain principles. Therefore today we are going to have a systematic discussion. We will start by discussing student health needs, followed by an evaluation of the existing health information dissemination system at NUST. Lastly, we will

discuss your viewpoints on the principles and procedures that should be followed when developing and implementing a needs-based health information dissemination framework.

Materials and supplies for focus groups

- Consent forms
- Pads & Pencils for each participant
- Focus Group Discussion Guide for Facilitator
- Recording device
- Notebook for note-taking
- Refreshments

Discussion begins. Focus group discussion will last about one hour. Remember information provided in the focus group discussion will be kept confidential. Kindly turn off your cell phones. I encourage you to participate in the discussion as fully as you can.

Questions:

1. What are your health information needs?
2. To what extent is NUST meeting your health information needs?
3. What information dissemination principles and strategies should be followed when developing and implementing health information dissemination programmes for students?

Probes for Discussion:

- *Health information literacy skills*
- *Preferred content, channels and media*
- *Health information dissemination practices at NUST*
- *Applicable health information dissemination principles*

That concludes our focus group. Thank you so much for coming and sharing your thoughts and opinions with us.

Appendix C: Interview Schedule for Dean of Students

INTERVIEW SCHEDULE FOR THE DEAN OF STUDENTS

Venue: Office of the Dean of Students

Theme: Health information dissemination among undergraduate students at NUST

Date:

Contact Details

Name and Surname: _____

Read out the following:

I am carrying out a study on health information dissemination methods at NUST, the ultimate objective of the study being to design a needs-based framework that may facilitate the development of a cost effective strategy for disseminating health information to students. The study is undertaken as part of the requirements of a PhD being undertaken at the University of Cape Town Library and Information Studies Centre.

Your experiences and suggestions will be used to inform the design of the framework, which would be useful during the development of a user-driven solution to health problems that face students at NUST. Would you mind answering a few questions regarding the health information needs of students and health information dissemination methods in use at NUST?

Note: Your answers will be treated with confidentiality. All responses will remain anonymous. Please feel free to ask questions regarding this study. You may contact me later if you have any additional questions.

Interview topics

Health information needs; Readiness and resources assessment; Health information dissemination principles and procedures

Health Information Needs

1. What do you think are the general health concerns of students at NUST?

2. Please indicate the health topics you think students should have access to?

- ☐ Treatment of specific diseases
- ☐ Prevention of diseases
- ☐ Access to health care providers and medical facilities

Other.....

Readiness and Resource Assessment (Evaluation)

3. To what extent do you think NUST has adequate human resources for effective dissemination of health information to students?

4. Do you think the available staff are qualified enough to provide information that meets student health information needs?

5. To what extent do you think student health services are accessible by students seeking health information?

6. To what extent do you think NUST has enough health information sources that meet students' needs?

7. Has NUST forged any partnership(s) with local health organisations on the provision of health information to students?

8. To what extent is your department meeting the health information needs of students?

9. To what extent is your department able to incorporate additional staff/professionals to deal with student health issues?

10. To what extent have you used Information and Communication Technologies (ICTs) in disseminating health information to students?

11. To what extent is NUST able to afford an information-based health promotion programme?

12. What do you think are the major challenges regarding student access to health information?

13. What are the major obstacles in developing and implementing an information-based health promotion programme?

14. Considering all the above, how well prepared are you (and your department) to develop and implement an information-based health promotion programme?

15. Do you have any comments or recommendations regarding health information dissemination at NUST?

.....
.....

Health information dissemination principles and procedures

16. Health promoters have recommended a number of information dissemination principles for universities; please state whether or not NUST should implement them in future health information dissemination programmes

a. Health information dissemination should be prevention-focused.

Yes____ No____

b. Health information dissemination should focus on specific diseases.

Yes____ No____

c. Students should be provided with a platform where they can voice their health concerns

Yes____ No____

d. Students should be consulted and involved during the development and implementation of health information dissemination systems

Yes____ No____

e. Health information dissemination systems should use a variety of information methods to distribute health information to students

Yes____ No____

f. Universities should disseminate a variety of health topics to students, instead of isolated topics such as HIV and AIDS

Yes____ No____

g. Health information dissemination systems should be integrated, instead of isolated programmes targeting specific diseases

Yes____ No____

- h. Health information dissemination efforts should focus on the development of students' life skills so that students can be in control of their health

Yes____ No____

- i. There is need for a policy for the effective dissemination of health information to students

Yes____ No____

- j. The use of Information and Communication Technologies (websites, web 2.0, social media, etc.) is essential for effective dissemination of health information

Yes____ No____

Do you have any recommendations regarding these health information dissemination principles and procedures? If yes, please state

them.....
.....

Thank you for your participation

Appendix D: Interview Schedule for Student Counsellor

INTERVIEW SCHEDULE FOR THE STUDENT COUNSELLOR

Venue: Office of the Student Counsellor

Theme: Health information dissemination among undergraduate students at NUST

Date:

Contact Details

Name and Surname: _____

Read out the following:

I am carrying out a study on health information dissemination methods at NUST, the ultimate objective of the study being to design a needs-based framework that may facilitate the development of a cost effective strategy for disseminating health information to students. The study is undertaken as part of the requirements of a PhD being undertaken at the University of Cape Town Library and Information Studies Centre.

Your experiences and suggestions will be used to inform the design of the framework, which would be useful during the development of a user-driven solution to health problems that face students at NUST. Would you mind answering a few questions regarding the health information needs of students and health information dissemination methods in use at NUST?

Note: Your answers will be treated with confidentiality. All responses will remain anonymous. Please feel free to ask questions regarding this study. You may contact me later if you have any additional questions.

Interview topics

Student health information needs; Health information dissemination practices, principles, and procedures; Readiness and resources assessment

Student Health Information Needs

1. Students request for health information on which topics? How frequently do students request for health information?

.....
.....

2. Which information sources do you think students prefer for accessing and receiving health information?

.....
.....

3. Which information formats do you think students prefer for accessing and receiving health information?

.....
.....

4. Which information media do you think students prefer for accessing and receiving health information?

.....
.....

Health information dissemination practices

5. You have provided students with health information on which topics?

.....
.....

6. Which information sources have you used for disseminating health information to students?

.....
.....

7. Which information media have you used for disseminating health information to students?

.....
.....

8. Which information formats have you used for disseminating health information to students?

.....
.....

9. Do you actively disseminate health information to students or do you wait for students to request for health information?

.....
.....

Information dissemination principles and procedures

10. Do you think health information dissemination at NUST should be prevention-focused or focused on specific diseases? Yes____ No____

11. Do you think students there should be provided with a platform where they can voice their health concerns? Yes____ No____

12. Do you think students should be consulted and involved during the development and implementation of health information dissemination systems at NUST? Yes____ No____

13. Should the health information dissemination system at NUST use a variety of information methods to distribute health information to students? Yes____ No____

14. Do you think NUST should disseminate a variety of health topics to students, instead of isolated topics such as HIV and AIDS? Yes____ No____

15. Do you think the health information dissemination system should be integrated, instead of isolated programmes targeting specific diseases? Yes____ No____

16. Do you think NUST should focus its health information dissemination efforts towards the development of students' life skills so that students can be in control of their health? Yes____
No____

17. Is there any need for a policy for the dissemination of health information to students? Yes____ No____

18. What is your view on the use of Information and Communication Technologies (ICTs) for disseminating health information?

.....
.....

Readiness and resources assessment

19. To what extent do you know the health information needs of students? To what extent do you think NUST is meeting these needs?.....

20. To what extent do you believe NUST has an adequate number of health workers and other primary care providers to meet the specific health information needs of students?

.....

21. To what extent do you believe you have an adequate number of information sources to meet the information needs of the student population? How accessible are these sources?

.....

22. Health information dissemination may require developing relationships with other health organisations. Assuming this is the case, to what extent is NUST able to effectively engage other stakeholders?

.....

23. To what extent do partnerships exist with local health organisations to enable NUST to provide cost effective health promotion to students?

-Please describe the partnerships

.....

24. To what extent are you using ICTs to disseminate health information to students?

-Please specify the ICTs that you have used.

-If yes, which ICTs have proved to be cost effective?

.....

25. To what extent does NUST encourage students to be actively involved in decisions involving their healthcare and self- management of their healthcare?

-In which areas have you engaged students with regard to health promotion?

.....

26. Considering the above, do you think NUST is ready to engage in more effective health information dissemination programmes targeting students?

.....

Thank you for your participation

Appendix E: Interview Schedule for Nursing Sister

INTERVIEW SCHEDULE FOR THE NURSING SISTER

Venue: Office of the Nursing Sister

Theme: Health information dissemination among undergraduate students at NUST

Date:

Contact Details

Name and Surname: _____

Read out the following:

I am carrying out a study on health information dissemination methods at NUST, the ultimate objective of the study being to design a needs-based framework that may facilitate the development of a cost effective strategy for disseminating health information to students. The study is undertaken as part of the requirements of a PhD being undertaken at the University of Cape Town Library and Information Studies Centre.

Your experiences and suggestions will be used to inform the design of the framework, which would be useful during the development of a user-driven solution to health problems that face students at NUST. Would you mind answering a few questions regarding the health information needs of students and health information dissemination methods in use at NUST?

Note: Your answers will be treated with confidentiality. All responses will remain anonymous. Please feel free to ask questions regarding this study. You may contact me later if you have any additional questions.

Interview topics

Student health information needs; Evaluation of existing system; Health information dissemination principles and procedures

Health Information Needs

1. What are the most common health problems that affect undergraduate students?
2. What kind of health information have you provided students with?
3. Do you think students have the ability to search for health information on their own?
4. Which information formats do you think students prefer when receiving health information?

Evaluation of Existing System

5. To what extent do you believe access to accurate health information can help solve students' health problems?
6. What methods have you used to provide health information to students?
7. Which information media do you think students prefer when receiving health information?
8. Are you aware of any information dissemination channels that are being used by NUST to disseminate health information to students? If yes, please describe them.
9. In your own opinion, do you think NUST is using proper channels and formats in disseminating health information to students?
10. To what extent do you think NUST is being successful in meeting the health information needs of students?
11. Which channels and formats do you think NUST should use for disseminating health information to students?
12. What do you think are the challenges that face students in accessing health information on campus?

Health information dissemination principles and procedures

13. Please state whether or not you agree with the following information dissemination principles that have been proposed by health promoters for university-based health promotion programmes:

- a. Health information dissemination should be prevention-focused Yes_____ No_____


- b. Students should be provided with a platform where they can voice their health concerns
Yes____ No____
- c. Students should be consulted and involved during the development and implementation of health information dissemination systems
Yes____ No____
- d. Health information dissemination systems should use a variety of information methods to distribute health information to students
Yes____ No____
- e. Universities should disseminate a variety of health topics to students, instead of isolated topics such as HIV and AIDS
Yes____ No____
- f. Health information dissemination systems should be integrated, instead of isolated programmes targeting specific diseases
Yes____ No____
- g. Health information dissemination efforts should focus on the development of students' life skills so that students can be in control of their health
Yes____ No____
- h. There is need for a policy for the effective dissemination of health information to students
Yes____ No____
- i. The use of Information and Communication Technologies (websites, web 2.0, social media, etc.) is essential for effective for disseminating health information
Yes____ No____

Do you have any comments of recommendations on health information dissemination principles and procedures-----

14. To what extent are you ready to participate in information-based health promotion programmes?

Thank you for your participation

Appendix F: Letter of Authorization-NUST



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

P. O. Box AC 939 – Ascot – Bulawayo, Zimbabwe
Cnr. Gwanda Road/Cecil Avenue

Telephone: 263-9-282842/289413
Fax: 263-9-286803

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

07 February 2013

The Registrar
National University of Science and Technology
Box AC939
Ascot
BULAWAYO

Dear Sir


Re: **MR. THOMAS MATINGWINA: SUPPORTING LETTER**


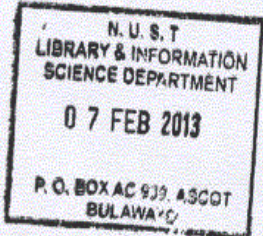
Mr. Thomas Matingwina, a lecturer in the Department of Library and Information Science is studying for a PhD in Library and Information Studies with the University of Cape Town. He has asked me to write him a letter supporting his request to collect data for his research project at NUST.

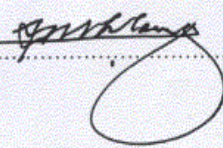
Mr. Matingwina's research area is on "Health Information Dissemination". It will be very much appreciated if you could assist by giving him permission to undertake research.

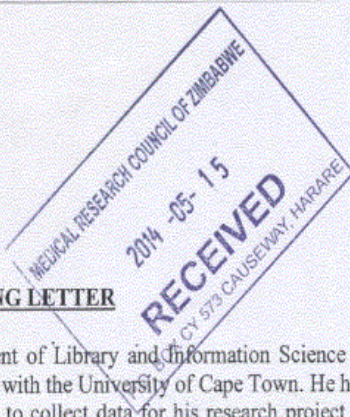
If you are willing to assist, please indicate your willingness by signing, dating and stamping the second copy of this letter and returning it to our office.

Thank you.


Mrs. E. Maisiri



SIGNED  DATE 07/02/2013 OFFICIAL STAMP



Appendix G: Letter of Authorization-MRCZ

Telephone: 791792/791193
Telefax: (263) - 4 - 790715
E-mail: mrcz@mrcz.org.zw
Website: <http://www.mrcz.org.zw>



Medical Research Council of Zimbabwe
Josiah Tongogara / Mazoe Street
P. O. Box CY 573
Causeway
Harare

APPROVAL

REF: MRCZ/A/1835

23 May 2014

Thomas Matingwira
National University of Science and Technology
P.O Box AC 939
Ascot
Bulawayo

RE: Health Information dissemination among undergraduate students in Zimbabwe with particular reference to the National University of Science and Technology: A study in developing an intergrated framework for health information dissemination.

Thank you for the application for review of Research Activity that you submitted to the Medical Research Council of Zimbabwe (MRCZ). Please be advised that the Medical Research Council of Zimbabwe has **reviewed** and **approved** your application to conduct the above titled study.

This approval is based on the review and approval of the following documents that were submitted to MRCZ for review:-

- a) Study proposal
- b) Informed Consent Forms (Dean, Student Counsellor, Students and Nursing Sister)

- **TYPE OF MEETING** : Expedited
- **EFFECTIVE APPROVAL DATE** : 23 May 2014
- **EXPIRATION DATE** : 22 May 2015

After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the MRCZ Offices should be submitted three months before the expiration date for continuing review.

• **SERIOUS ADVERSE EVENT REPORTING:** All serious problems having to do with subject safety must be reported to the Institutional Ethical Review Committee (IERC) as well as the MRCZ within 3 working days using standard forms obtainable from the MRCZ Offices or website.

• **MODIFICATIONS:** Prior MRCZ and IERC approval using standard forms obtainable from the MRCZ Offices is required before implementing any changes in the Protocol (including changes in the consent documents).

• **TERMINATION OF STUDY:** On termination of a study, a report has to be submitted to the MRCZ using standard forms obtainable from the MRCZ Offices or website.

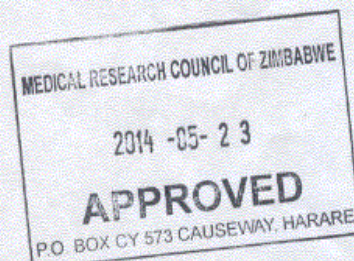
• **QUESTIONS:** Please contact the MRCZ on Telephone No. (04) 791792, 791193 or by e-mail on mrcz@mrcz.org.zw

Other

- Please be reminded to send in copies of your research results for our records as well as for Health Research Database.
- You're also encouraged to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study.

Yours Faithfully


MRCZ SECRETARIAT
FOR CHAIRPERSON
MEDICAL RESEARCH COUNCIL OF ZIMBABWE



PROMOTING THE ETHICAL CONDUCT OF HEALTH RESEARCH

Appendix H: Informed Consent Letter for NUST Students



UNIVERSITY OF CAPE TOWN, LIBRARY AND INFORMATION STUDIES CENTRE, CAPE TOWN

INFORMED CONSENT FORM FOR NUST STUDENTS

Informed Consent Form for NUST Students who are invited to participate in a research study entitled "Health information dissemination among undergraduate students in Zimbabwe with particular reference to the National University of Science and Technology: a study in developing an integrated framework for health information dissemination".

Researcher: Thomas Matingwina

Supervisor: A/Prof. J. Raju

Institution: University of Cape Town

Institution: University of Cape Town

Cell: 00263773240911

Phone number: 021-6503091

E-mail: tmingwina@gmail.com

E-mail: jaya.raju@uct.ac.za

Medical Research Council Contact Details

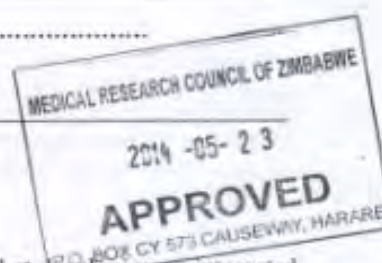
Medical Research Council of Zimbabwe
P O Box CY 573
Causeway
Harare
Zimbabwe

Corner Josiah Tongogara and Mazowe Street
Harare
Zimbabwe

Phone number: 04791792

Signature of researcher.....

Date.....



PART I: INFORMATION SHEET


Introduction

My name is Thomas Matingwina. I am working on a study aimed at developing an integrated framework for disseminating health information to undergraduate students. The study is undertaken as part of the requirements of a PhD being undertaken at the University of Cape Town. I would greatly appreciate your participation in responding to these questions, even though I am not able to financially compensate you.

Purpose of the research

The purpose of this discussion is to gather information that will assist in the development of a needs-based health information dissemination framework. The discussion will cover students' health information needs; their perceptions on existing health information dissemination strategies at NUST; and students' preferences in terms of health information sources, content, and channels or media that should be used to convey health information. Hopefully, the information that you provide will be used to improve the quality and use of health promotion services at NUST.

Appendix I: Informed Consent Letter for Dean of Students

**UNIVERSITY OF CAPE TOWN, LIBRARY AND INFORMATION STUDIES
CENTRE, CAPE TOWN**

INFORMED CONSENT FORM FOR DEAN OF STUDENTS


Informed Consent Form for NUST the Dean of students who is invited to participate in a research study entitled "Health information dissemination among undergraduate students in Zimbabwe with particular reference to the National University of Science and Technology: a study in developing an integrated framework for health information dissemination".

Researcher: Thomas Matingwina	Supervisor: A/Prof. J. Raju
Institution: University of Cape Town	Institution: University of Cape Town
Cell: 00263773240911	Phone number: 021-6503091
E-mail: tmingwina@gmail.com	E-mail: jaya.raj@uct.ac.za

Medical Research Council Contact Details	
Medical Research Council of Zimbabwe P O Box CY 573 Causeway Harare Zimbabwe	Corner Josiah Tongogara and Mazowe Street Harare Zimbabwe
Phone number: 04791792	

Signature of researcher.....

Date.....




PART I: INFORMATION SHEET

Introduction
My name is Thomas Matingwina. I am working on a study aimed at developing an integrated framework for disseminating health information to undergraduate students. The study is undertaken as part of the requirements of a PhD being undertaken at the University of Cape Town. I would greatly appreciate your participation in responding to these questions, even though I am not able to financially compensate you.

Purpose of the research
The purpose of this interview is to gather information that will assist in the development of a needs-based health information dissemination framework. The interview will cover students' health information needs; existing health information dissemination strategies at NUST; readiness and resource assessment, and applicable health information dissemination principles and procedures. Hopefully, the information that you provide will be used to improve the quality and use of health promotion services at NUST.

Appendix J: Informed Consent Letter for Student Counsellor



**UNIVERSITY OF CAPE TOWN, LIBRARY AND INFORMATION STUDIES
CENTRE, CAPE TOWN**

INFORMED CONSENT FORM FOR THE STUDENT COUNSELOR

Informed Consent Form for NUST the Student Counselor who is invited to participate in a research study entitled "Health information dissemination among undergraduate students in Zimbabwe with particular reference to the National University of Science and Technology: a study in developing an integrated framework for health information dissemination".

Researcher: Thomas Matingwina **Supervisor:** A/Prof. J. Raju
Institution: University of Cape Town **Institution:** University of Cape Town
Cell: 00263773240911 **Phone number:** 021-6503091
E-mail: tmatingwina@gmail.com **E-mail:** jaya.raju@uct.ac.za

Medical Research Council Contact Details	
Medical Research Council of Zimbabwe P O Box CY 573 Causeway Harare Zimbabwe	Corner Josiah Tongogara and Mazowe Street Harare Zimbabwe
Phone number: 04791792	

Signature of researcher.....
Date.....

PART I: INFORMATION SHEET

Introduction
My name is Thomas Matingwina. I am working on a study aimed at developing an integrated framework for disseminating health information to undergraduate students. The study is undertaken as part of the requirements of a PhD being undertaken at the University of Cape Town. I would greatly appreciate your participation in responding to these questions, even though I am not able to financially compensate you.

Purpose of the research
The purpose of this interview is to gather information that will assist in the development of a needs-based health information dissemination framework. The interview will cover students' health information needs; existing health information dissemination strategies at NUST; readiness and resource assessment, and applicable health information dissemination principles and procedures. Hopefully, the information that you provide will be used to improve the quality and use of health promotion services at NUST.

MEDICAL RESEARCH COUNCIL OF ZIMBABWE
2014-05-23
APPROVED
P.O. BOX 573 CAUSEWAY, HARARE

Appendix K: Informed Consent Letter for Nursing Sister



UNIVERSITY OF CAPE TOWN, LIBRARY AND INFORMATION STUDIES CENTRE, CAPE TOWN

INFORMED CONSENT FORM FOR THE NURSING SISTER

Informed Consent Form for NUST the Nursing Sister who is invited to participate in a research study entitled "Health information dissemination among undergraduate students in Zimbabwe with particular reference to the National University of Science and Technology: a study in developing an integrated framework for health information dissemination".

Researcher: Thomas Matingwina

Supervisor: A/Prof. J. Raju

Institution: University of Cape Town

Institution: University of Cape Town

Cell: 00263773240911

Phone number: 021-6503091

E-mail: tmingwina@gmail.com

E-mail: jaya.raju@uct.ac.za

Medical Research Council Contact Details

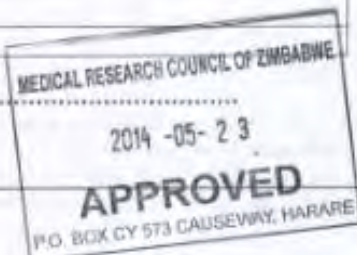
Medical Research Council of Zimbabwe
P O Box CY 573
Causeway
Harare
Zimbabwe

Corner Josiah Tongogara and Mazowe Street
Harare
Zimbabwe

Phone number: 04791792

Signature of researcher.....

Date.....



PART I: INFORMATION SHEET

Introduction

My name is Thomas Matingwina. I am working on a study aimed at developing an integrated framework for disseminating health information to undergraduate students. The study is undertaken as part of the requirements of a PhD being undertaken at the University of Cape Town. I would greatly appreciate your participation in responding to these questions, even though I am not able to financially compensate you.

Purpose of the research

The purpose of this interview is to gather information that will assist in the development of a needs-based health information dissemination framework. The interview will cover students' health information needs; existing health information dissemination strategies at NUST; readiness and resource assessment, and applicable health information dissemination principles and procedures. Hopefully, the information that you provide will be used to improve the quality and use of health promotion services at NUST.